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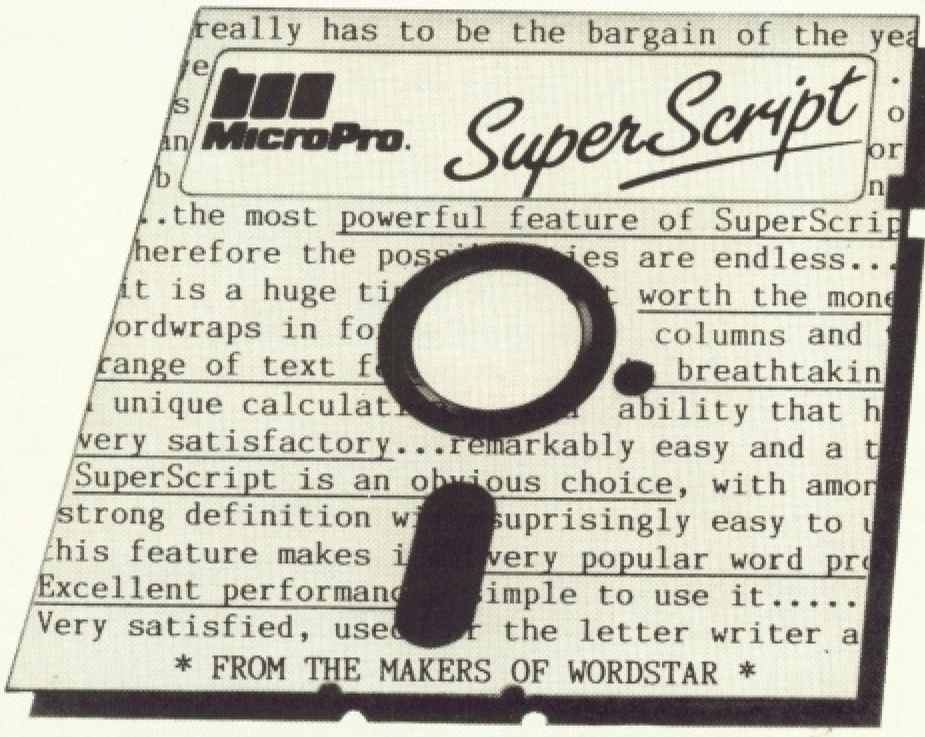
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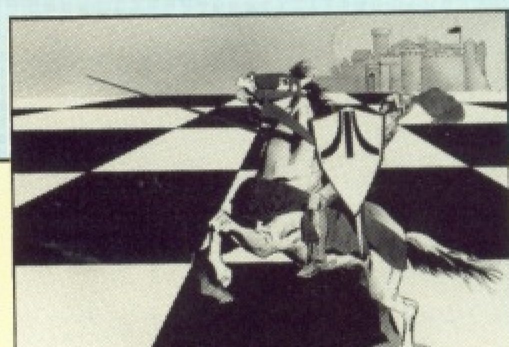
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SHOW IS ATARI'S LAUNCHING PAD

JACK Tramiel, Atari's charismatic chairman, will be jetting across the Atlantic with a party of VIPs to attend the Atari Computer Show in London.

The show that takes place in the Champagne Suite of the Novotel, Hammersmith, London, from March 7 to 9 is the first Atari-specific exhibition to be held anywhere in the world.

"Jack's presence indicates the significance we attach to it", says Rob Harding, Atari UK's sales and marketing boss.

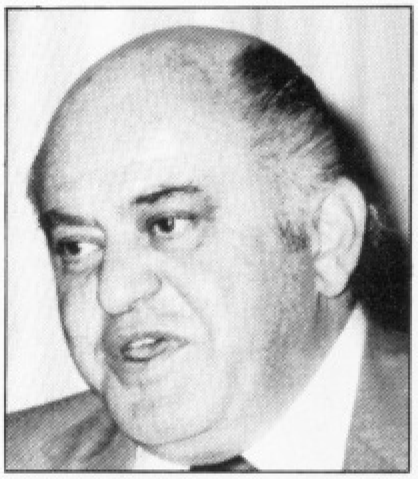
"We see it as the perfect launching pad for some exciting new developments which, for the moment, must be kept under wraps".

Atari has refused to comment on rumours from the States that Tramiel will be unveiling a new machine during his London stay.

However other major exhibitors at the show are not playing it quite so tight-lipped.

The latest survey by *Atari User* has confirmed that well in excess of 100 new products will be unveiled at the show.

Of these, some two thirds will be aimed at the 8 bit machines – the 800XL and the 130XE – while the remainder are for the 16 bit ST range.



And Jack Tramiel will be there...

One company alone will be unveiling more than 40 new products, many originating in the United States.

Software Express and its subsidiary SECS has announced the mass launch as part of the group's bid to dominate the Atari market in the UK.

The most interesting contribution is likely to be Go Forth, a programming language for the 8 bit machines. Multi tasking, it will be priced at £24.99 on disc.

Yet another Atari market leader, Silica Shop, will be launching at least 30 new products at the show. Once again many will be American imports being brought over for the first time under licence.

Microdeal has also jumped on to the American product importing bandwagon. The company has linked up with Michtron, one of the USA's main producers for the ST.

As a result Microdeal will be offering first time products for the ST including Time Bandit, a multi screen graphics arcade adventure, price £29.95, the Michtron Utilities Programmers Disc Zap, which enables programmers to look at any part of a disc or search for strings of characters, price £39.95, and Mi-Term, mouse-driven communications software costing £49.95.

Michtron president Gordon Monnier and Time Bandit programmer Timothy Purvers will be at the show to provide advice.

Not to be overshadowed by its American connection, Microdeal itself will be launching Disc Help, a menu-driven disc recovery program for the ST, costing £29.95.

"Companies have been pulling out all the stops to ensure that the first Atari Computer Show will be a truly memorable event", says Derek Meakin, head of Database Publications, the show's organisers.

"I'm sure Jack Tramiel is going to be delighted with the results".

More programs on way

A NEW division of publishers Software Express has been created to boost the number of programs available to Atari users.

Already it has reached a number of licence agreements that entitle it to import a range of products from the US, and to get British software distributed in America.

A key element in the new venture is Program Exchange, an open invitation to professional software houses and hobbyist programmers alike to join in the venture.

"We see our role as being like that of a record company, publishing software from many sources under one label", says Jon Dean, former Atari UK product manager who is in charge of the project.

"We would welcome the opportunity of evaluating software from professional and amateur authors.

"Quite often, home programmers have the best new ideas and approaches to software, but their programming skills are weak. If we feel a title will fit into our range we'll work with the author to make that program a quality title".

The venture will be launched officially at the Atari Computer Show at the Novotel, London, this month and Dean says details of the first batch of titles will be issued at that time.

ST EDUCATION BARGAIN

IN a special offer for educational establishments, Atari has bundled the 520ST with 500k disc drive, 12in monochrome monitor and mouse for £499, a saving of more than £150 over normal retail prices.

The same system with a 14in colour monitor costs £699 – £130 cheaper than the normal retail price. A software pack including 1st Word, a window-based word processor, DB Master One, a database, ST Basic and Logo programming languages is included with both packages.

Atari marketing manager Rob Harding said: "The 520ST is making a major impact in education, with universities, colleges and local authorities already purchasing in quantity.

"The 520ST's leading edge technology at prices compatible with the economic pressures in education today will lead to the machine becoming the standard educational tool".

The special prices to education are in force until the end of March.

New deck

THE XC11, replacement for the 1010 cassette deck, has been released by Atari.

It is built by a major Japanese manufacturer, is powered by the computer and matches the 130XE styling. Price is £35.

It is compatible with all Atari 8 bit machines, but will be specially bundled with the 130XE at a price of £169, according to an Atari source.

Atari's out of the red

ATARI has witnessed a dramatic turn around in its fortunes during the first financial year with Jack Tramiel at the helm. It is now firmly back in the black after recording a deficit of $500 million during the previous 12 months.

"We took an ailing company, with considerable losses, and we have come out with an overall profit", Max Bambridge, Atari UK's boss, told *Atari User*. "So we are now in a position of considerable moral strength because we not only know what we are doing, but are convinced we are right".

Canadian sales up

AFTER experiencing initial difficulty in setting up an ST dealer network in Canada Atari has now resolved its problems and sales are going well according to reports.

Limited software availability had been listed as the main reason for dealer resistance to franchise agreements, but the growing number of ST programs being produced in the USA in particular seems to have overcome the Canadians' reluctance to take on the machine.

General manager for Atari in Canada, Ian Kennedy has said that current sales of the ST are "bang on target" and he expects 50,000 will be sold there within the next few months.

Atari now has more than 130 dealers throughout Canada and more are being signed up each week.

Colours by the million

ALL the colours of the rainbow – and a few million more besides – are offered by Technicolour Dream, a graphic art utility for the Atari 8 bit range from Red Rat Software.

The program enables the user to create pictures containing the whole palette of 256 colours – 16 shades x 16 luminances – which the Atari can display on the screen at the same time.

And because a further 128 filters can be used to mix new colours, the Atari's graphic capabilities are extended to more than eight million variations.

Graphic artist Marc Duffield describes the program as "the nearest thing to real painting. We have a screen for canvas, an electronic brush and as much colour as Van Gogh could ever have wanted".

Pictures produced with Technicolour Dream can be flipped into edit mode and stored in memory while being worked on, or dumped to an Epson RX80, FX80 or similar printer and saved on to tape or disc in compacted form.

Technicolour Dream costs £9.95 on cassette and £12.95 on disc.



HI-TECH ZOO BEARS

IN London recently for the Toy Fair was Nolan Bushnell, the pioneering electronics wizard who started the video revolution in the 1970s with the first onscreen TV game Pong and went on to found Atari.

When Nolan sold Atari to Warner Communications he was prevented from developing any electronic game or toy for seven years.

But now that his non-compete time is up, Nolan is back in the business, and has set up a California-based company called Axlon.

He has turned his electronic genius to creating sensational new toys. They are filled with all kinds of unusual electronics that make them do fun things to challenge a child's imagination – like A.G. Bear, a high-tech teddy bear that talks back to you in electronic bear talk.

● *Nolan, and friends, are pictured above at London Zoo.*

OS goes on ROM

THE ST operating system is now available on ROM.

Upgrades containing the set of five necessary chips are available for installation at all main dealers at a cost of £25.

Big Top thrills

A GAME intended to capture all the thrills and spills of the Big Top has been released by Infocom for the 800XL, the 130XE and 520ST.

Ballyhoo is an interactive mystery in which the player takes on the role of a small town circus-goer caught up in a kidnapping.

Stunts must be tried, beasts braved, clues found, puzzles solved and dangers dodged in order to gain the release of the captive, the owner's daughter.

A colourful circus program introduces the characters and is included in the package with balloon, trade card and a ticket to Spangleland. Price $39.95.

US borrows UK techniques

MARKETING methods refined in Britain are being copied by Atari Corporation in America.

Bundling micros with software and peripherals to make up attractive packages has become common practice in the UK.

This tactic played a big part in helping the British home computer industry out of the 1985 doldrums by stimulating sales.

The lesson hasn't been wasted on the Americans, to whom bundling is a novel concept, rarely used.

But now Atari has decided to market the 130XE in the USA as a "complete starter package" for computing and word processing.

For $399 the purchaser gets the 130XE with mouse, printer, disc drive and five software titles – two games plus Music Painter, Paint and AtariWriter.

Atari is also putting together a package including the 65XE which is expected to retail for between $300 and $350.

Atari steals the show at Las Vegas

VISITING the 1986 Winter Consumer Electronics Show in Las Vegas, it was hard to believe it was only 12 months since Atari stole the CES limelight with prototypes of the ST and XE computers.

The question then was: "What about the software?" One 520ST and 130XE launch later, this year's CES Atari stand was dominated by banks of monitors running video snippets of software.

The only hardware consisted of two STs and two 130XEs and one model each of the 65XE, 2600 and 7800.

I asked Jack Tramiel how Atari was faring one year on. He replied: "Very good. We still have lots to do, but so far very good".

Company president Sam Tramiel went further. "With the introduction at CES of exciting new products and programs, we are announcing that this is the 'new' Atari, a revitalised company with a clear claim to several market segments.

"We're the fastest growing manufacturer of popularly priced computers and the leading manufacturer of video games".

According to Sam programming for the ST is the fastest growing sector of the computer market, with 1,500 companies worldwide producing software for the range.

Atari has announced expanded distribution plans for the 520ST in the USA – meaning non-specialist chain stores – but as a strategy intends to limit its most powerful machine, now the 1040ST, to authorised dealers only.

The 1040ST, announced at the show and described as a business system, is similar to the 520ST but contains 1mbyte

By JON DEAN

of RAM, a built-in 3½in double sided, double density drive, and has TOS on ROM.

Software includes Basic, 1st Word and Neochrome and the machine is selling in the USA now at $1,199.95 with colour monitor and $999.95 monochrome.

Atari also announced changes to the 520ST including a built in RF modulator enabling standard TV sets to be used, and a package price with drive and monochrome monitor of less than $700.

A new peripheral promised soon is a 20mbyte, 5¼in hard disc drive for the ST, designed to deliver the increased power requirements for most professional applications.

One ST at the show had been set aside for live demonstrations from a guest software house.

We only saw Audiolight demonstrating their latest title marketed by Activision, The Music Studio. Hooked up via the Midi to the ST was a Casio CZ101.

Music Studio, which runs under Gem, has similar capabilities to Island Logic's Music System and can generate some music and has the ability to edit up to 15 sounds or instruments.

Atari once again threw down the gauntlet saying "We Dare You To Compare", and showed the Commodore Amiga ($1795), Apple Macintosh ($2499) and their own 520ST ($899 with colour monitor) running a demonstration called Boink – a 3D ball bouncing across the screen and back.

The Mac with its monochrome display, was visibly slower and looked poor in comparison with the colour computers.

Atari's point came across. At a time when Commodore is saying the Amiga is in a different class altogether from the ST, the Boink comparison proved the ST to be just as fast and capable – and at a better price.

A starter pack has been introduced for the US market featuring the 130XE, 1027 letter quality printer, 1050 5.25in disc drive and five software packages – a personal finance manager, Star Raiders game, simple music and graphics packages plus Atariwriter Plus, an even better word processor. All this a snip at $399.99.

Is the support to continue on 8 bit products or are Atari putting all resources behind the ST?

Atari product manager John Skrutch gave reassuring answers: "Atari has an on-going commitment to all owners of 8 bit computers. In addition to the 65XE (US only) and 130XE, we have launched a new modem (US only) and the XC11 cassette drive".

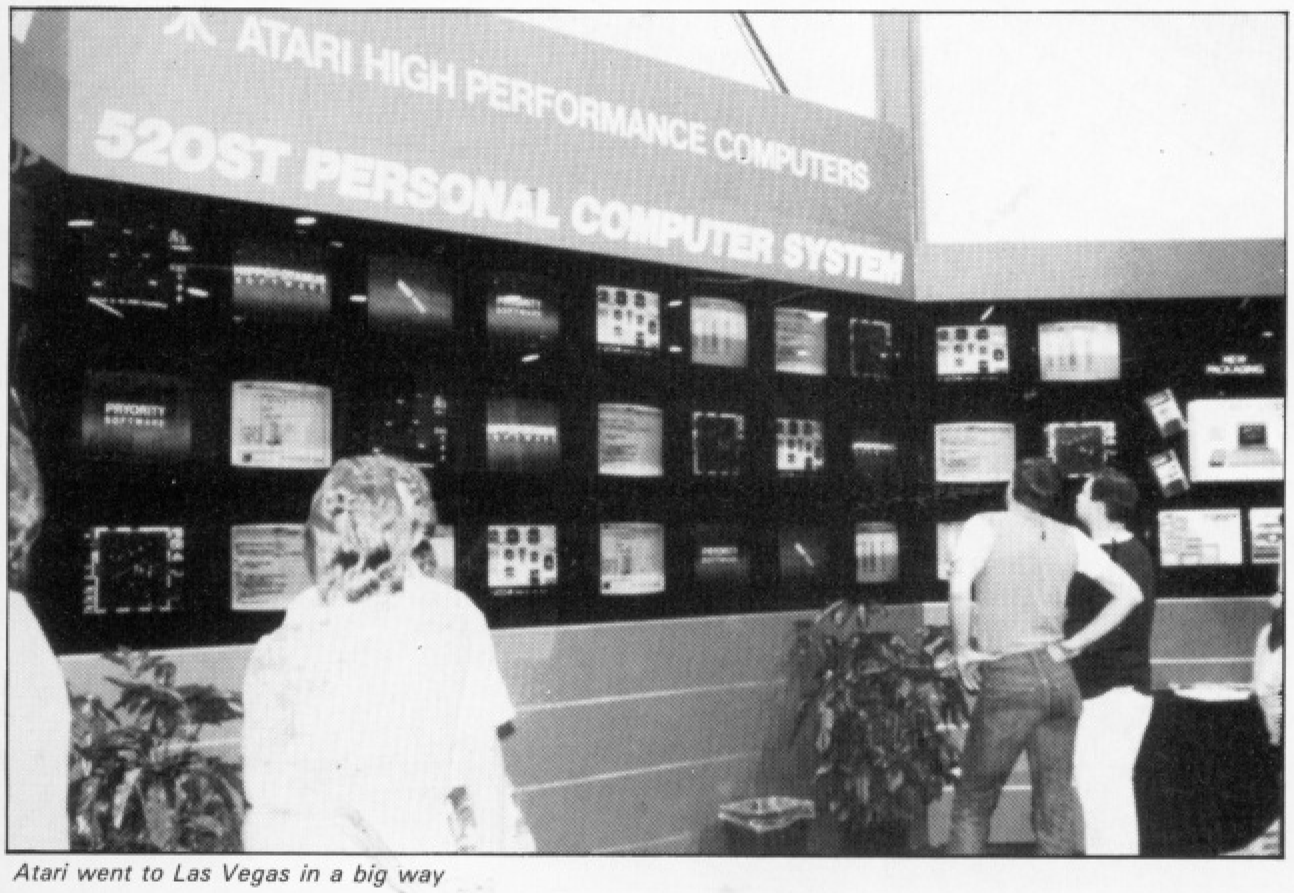
New software titles? "Our new XE package features three new titles including Atariwriter Plus, and other titles such as Planetarium and Proofreader should be available in the US early March.

"Star Raiders II is due for launch then also". This latter, previewed at the show, could be likened to The Last Starfighter.

Third-party software support? "New titles are being announced all the time. Many companies are coming back to the XE who have been away for a while".

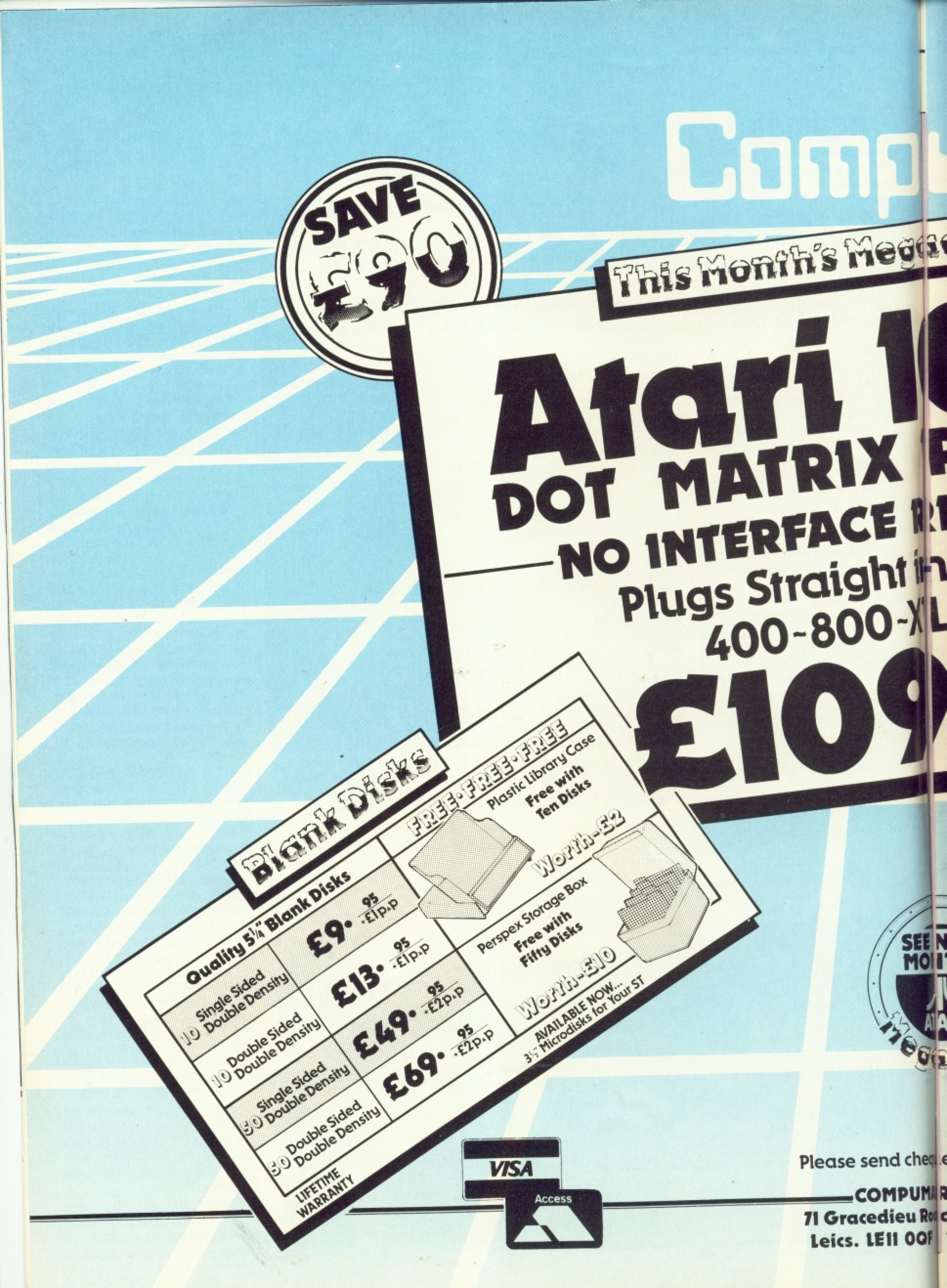
One final revelation from John was that a Gem-type package will be available for the XE using a mouse later this year.

A new Entertainment Electronics Division has been set up, and according to executive vice-president Michael V. Katz there is an indication of a continuing and growing market for video games.



Atari went to Las Vegas in a big way

** Jon Dean, former product manager of Atari UK, is managing director of SECS, a division of Software Express.*



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Now the Alien Attack gets under way



Part III of STEPHEN WILLIAMSON'S series on how to produce your own machine code games

I CONCLUDE this short series by completing our examination of the assembly language listing of Alien Attack. Figure I is a list of the data that is used to create the Player shapes.

DELAY

300

Because machine code operations are very fast compared to Basic a delay routine needs to be incorporated in Alien Attack to slow things down a little. This routine decreases the X register from 100 to 1 19 times, a total of 1881 cycles (99 × 19). This is similar to the Basic routine FOR DELAY = 1 TO 10 : NEXT DELAY.

The address 39082 stores the number of cycles which is set initially at 20. This number is altered at various points in the program to increase or decrease the timing of the delay. So setting 39082 to 150 during the ship explosion routine gives a much longer delay, as the Atari counts through 14751 cycles (99 × 149).

SHIP

● Lines 320 to 390 control the movement of the ship.

320

The current vertical and horizontal coordinates of the ship are transferred to the X and Y registers.

330

Address 632 is checked to see if the joystick has been moved. If moved then the X and Y registers are increased or decreased according to the joystick position.

The numerical values of the joystick positions are the same as used by the Basic command STICK(0). X and Y are stored in the ship vertical and horizontal stores to provide a record of the new ship positions. The X value is stored in 53248 to set up the new horizontal position.

360-390

The data for the ship design (see Figure I) is stored from address 37888 to 37904 (indexed by Y). A 0 is put into address 37887 and 37905 (indexed by Y) to erase pixels previously plotted at the top or bottom of the ship.

ALIEN 1

● Lines 400 to 480 handle the movement of Alien 1.

410

The Alien 1 colour register is cleared to see if it is dark red (53) which indicates that the Alien 1 has been hit. If hit then Alien 1 is not plotted and the program exits from this subroutine. X and Y are loaded with the current horizontal and vertical positions of Alien 1.

420-440

The shape of Alien 1 is plotted in the Alien 1 player stripe (38144 to 38158 indexed with Y).

450

0 is stored in 38142 and 38159 (indexed with Y) to erase pixels previously plotted at the top and bottom of the Alien 1 shape.

The accumulator is loaded with whatever value is held in address 20. Address 20 is part of the Atari clock system and the value held in this address changes rapidly. This is used to provide a pseudo-random number and thus plot a random flight path for Alien 1.

Many arcade games suffer from the fact that few or no random elements are included so that, after playing for a while, you learn to anticipate the movement of monsters or alien spaceships. In Alien Attack the flight paths of the Aliens conform to a general pattern, but by using this routine it is impossible for the player to predict at what point an Alien will change direction.

By performing an arithmetic shift left (ASL A) on the accumulator the carry flag is set or not depending on whether bit 7 of the accumulator is on or off. The carry flag is checked – it will either be 0 for off or 1 for set – and if not set Y is increased to provide a new vertical position for Alien 1.

The horizontal position of Alien 1 is checked to see if it has reached the right hand side of the screen

(coordinate 198) and if so Alien 1 must change direction and the Alien 1 direction flag held at 208 is changed.

460

A similar check is made on the left hand position and if the Alien has reached there (coordinate 50) then the direction flag is changed. X is increased or decreased according to the direction flag.

470

The vertical position of Alien 1 is checked to see if it has reached the bottom of the screen. If so, Y is loaded with 0 ready to start the Alien off again from the top of the screen.

480

The updated horizontal position is stored at address 53249 (Alien 1 horizontal register) and X and Y coordinates are stored in the Alien 1 horizontal and vertical stores.

ALIEN 2

● Lines 490 to 559 handle the movement of Alien 2 in the same way as Alien 1. The only difference is that instead of the ASL operation to create a pseudo random number the LSRA (arithmetic shift right) operation is performed in line 540.

ALIEN 3

● Lines 560 to 650 handle Alien 3 movement. Line 620 performs a similar arithmetic shift operation to Alien 1, but the result, instead of acting on the vertical coordinate, acts on the horizontal coordinate to give a different type of random flight pattern.

FIRE

● Lines 670 to 740 handle the firing of the ship missile.

670

Address 646 is checked to see if the fire button has been pressed. If not pressed then the program jumps 32 bytes to avoid creating a new missile.

680

The ship missile fire flag (store 1536) is checked to see if a missile is already

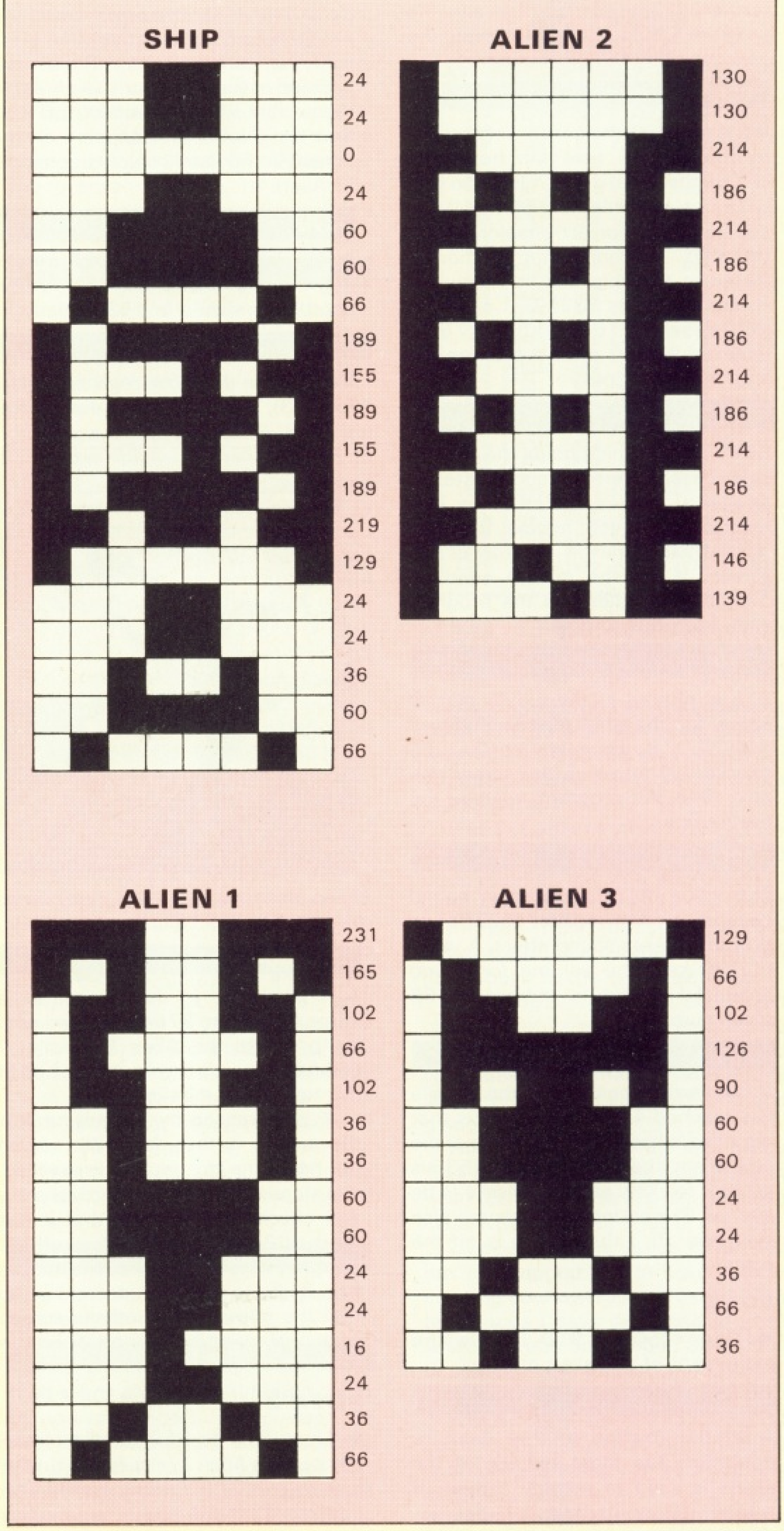


Figure I: Ship and alien shape data

on the screen. If on screen then no further missile can be fired and the program jumps 25 bytes to avoid the new missile creation routine.

690

A 2 is added to the horizontal position of the ship to give the horizontal coordinate value of the missile so that when the new missile is plotted it will appear in the correct position above the ship. The horizontal position is stored in the ship missile horizontal register (address 53252). 1 stored in addresses 37630 and 37631 (indexed with Y) plots a pixel on the ship missile stripe.

700

Store 1537, which holds the current ship missile vertical coordinate, is checked to see whether it has reached 4, which means that the missile has gone off the top of the screen. If so, the missile need be plotted no further and the program exits from this routine.

710

A 1 is plotted in the player missile stripe for the ship missile (indexed with Y). Y is decreased so that the missile will move up the screen the next time the program reaches the fire routine.

720

The value of Y is stored in sound channel 1 pitch register (53762) to give the missile sound effect. A value of 170 sets the volume for sound channel 1. A zero in address 53768 gives pure sound.

730

If the vertical position of the missile has reached 4 this again means that the missile has gone off the top of the screen and the missile flag at 1536 is set to 0 to allow another missile to be started. The sound channels are also switched off if the missile is off the screen.

BOMB

● Lines 750 to 910 handle the movement of the alien missiles.

760

A similar routine to that used to determine the flight pattern of the aliens is used to provide a random number (0 or 1) and this decides whether the Alien 1 missile is dropped. If the carry flag is clear then no missile is dropped and the program jumps 26 bytes.

If the carry flag is set the start position of the Alien 1 missile is set to the current Alien 1 position plus 2 so that the missile first appears on the screen immediately below the middle of Alien 1.

770

A 4 is loaded in the Alien 1 missile flag store at 1538 and the vertical coordinate stored in 1539.

780

If the Alien 1 colour register is dark red (53), and therefore Alien 1 has



been destroyed, the program jumps 31 bytes to avoid plotting the missile.

790-800

A 4 is plotted in the Alien missile stripe (37647 to 37649 indexed with Y) to create the Alien 1 missile. 0 erases the pixels previously plotted at the top of the missile.

Y is increased by 1 ready to plot the missile further down the screen the next time this routine is reached. Y is stored in the missile vertical store and checked to see whether it has reached 240 and is therefore off the bottom of the screen. If so the missile flag is set to 0 and Y decreased so that the missile stays off the screen and a new missile can then be plotted.

ALIEN 2

● Lines 810 to 850 handle movement of the Alien 2 missile in a similar fashion to that of Alien 1 missile. The new missile is dropped if the carry has been previously set from line 760. This means that the Alien 2 missile is dropped at a different time to that of Alien 1.

ALIEN 3

● Lines 860 to 910 deal with the Alien 3 missile in the same manner as that of Aliens 1 and 2.

COLLISION

● Lines 920 to 1080 control the collision between the aliens or alien missiles and the ship.

930

During the development of the program it was found that player pixels were left plotted at the bottom of the screen. Instead of revising the alien and ship subroutines it was simpler to add line 930, a routine that clears the bottom of the player stripe of any debris that has gathered there.

Because machine code is so fast, short routines make no discernable difference to the speed of programs. It is often easier and simpler to add a routine to solve the symptoms of a bug in the program rather than spend a long time hunting through the program to find the bug.

940

This line checks the collision detection registers to see whether the ship has been hit by an alien or alien missile.

950

If the ship has not been hit the program jumps to the kill subroutine to find out whether the ship missile has hit an alien.

960

All the sound registers are cleared.

970

150 is stored at address 39082 to slow down the delay routine.

980-990

The ship colour register (704) is loaded with 55 to turn the ship red. 64 is stored at address 36878, 144 in the channel 0 volume register (53761) and 255 stored in the channel 0 pitch register (53760). This combination provides the basis for the white noise explosion sound effect.

The X register is stored at 1544 so that it can be retrieved after the delay routine has been executed. A loop

decreases X from 144 to 128 to run the explosion sound and flash the screen background colour between red and black. 53 stored in address 710 gives red and 0 gives black.

The formula for calculating the colours to put into colour registers is value = colour * 16 + brightness.

1000-1080

Initialisation operations to re-run the game after the ship has been destroyed.

1000

Sets the starting coordinates of the ship.

1010

Clears the sound registers.

1020

Clears the PM data stripes.

1030-1040

Alien and missile stores are cleared.

1050

The collision detection registers are cleared and the delay timer reset to 20.

1060-1080

Store 1546 which holds the number of lives left is reduced by 1. If no lives are left then the subroutine return address is pulled off the stack by the use of PLA, PLA and the program returns to Basic.

0 clears the lives left indicator at the top of the screen and, according to how many lives are left, diamonds (character 96) are displayed at the top of the screen (address 24660).

KILL

● Lines 1090 to 1220 handle the collision between ship missile and aliens.

1100

The collision detection registers are checked to find out if an alien has been hit. If not then the program returns from the subroutine. X is loaded with a value according to which alien has been hit.

1110

64 is stored at 53768 and the sound registers cleared.

1120-1130

A loop is set up to reduce the Y value from 144 to 127 to create an explosion type sound similar to that of the collision routine. The delay timer is not changed so that the game halts only briefly whilst an alien is hit.

The colour register is indexed by X so that the Alien that has been hit will change colour to red (53). Whenever the program returns to the Alien plotting routines, a red alien will be cleared off the screen.

1140-1150

Initialisation and clearing routines.

1160-1190

These lines handle the increment of the score.

Stores 1547 to 1549 hold the character values of the score (16 to 25). A value of 16 is character 0 when displayed on the screen and 25 is character 9.

The score increment routine can be thought of as similar to the procedure that we go through when first learning to add up 1 to 3 digit numbers. For example, a score of 123 means that 3 is in the 1s column, 2 in the 10s column and 1 in the 100s column. Score 1549 keeps track of the 1s, 1548 the 10s and 1547 the 100s.

If the value of the 1s has not reached 25 (or score 9) then the 1s are incremented by 1 and the 10s and 100s left alone. If the value of the 1s has reached 25 (or score 9) then the 1s must be reset to character 16 (a 0) and the 10s incremented by one to give a score of 10, 20, 30 and so on.

If both the 1s and 10s have reached a value of 25 (equivalent to character 9) the score is 99, 199, 299 and so on and both the 1s and the 10s must be set to zero and the 100s incremented by 1 to give a score of 100, 200, 300 etc.

Finally the 1s, 10s and 100s are displayed at the top of the screen to show the current score.

1210

All alien colour registers are checked to see if they are red (53).

1220

If all aliens are red the timing register at address 39082 is decreased by one. Each subsequent wave of aliens will then be faster. This ensures that the skill needed to play Alien Attack increases the longer the game is played as, providing the player loses no lives, each alien wave is faster than the preceding one.

The routine does not allow the delay to go beyond 0. Decreasing a value of 0 in machine code gives a value of 255, and this would have the effect of slowing the game down to a snail's pace.

If all three aliens are hit, after a PLA instruction the program jumps to the clear routine. The PLA instruction is used in a similar way to the Basic command POP, because we are jumping out of a subroutine without going back to the return address.

The program has now completed one cycle of its operation and returns to the control routine again and continues in this manner until all the ship lives have been lost and the game is over.

Alien Attack fits into just under 1.5k and demonstrates something of what can be achieved by machine code without using a lot of memory.

I hope that this series of articles has encouraged you to have a go at creating your own arcade games. The techniques I have described in Alien Attack can be copied and developed to produce very sophisticated games.

Not everyone who writes their own machine code games is going to become a millionaire, but machine code programming can be a fun and satisfying pastime.

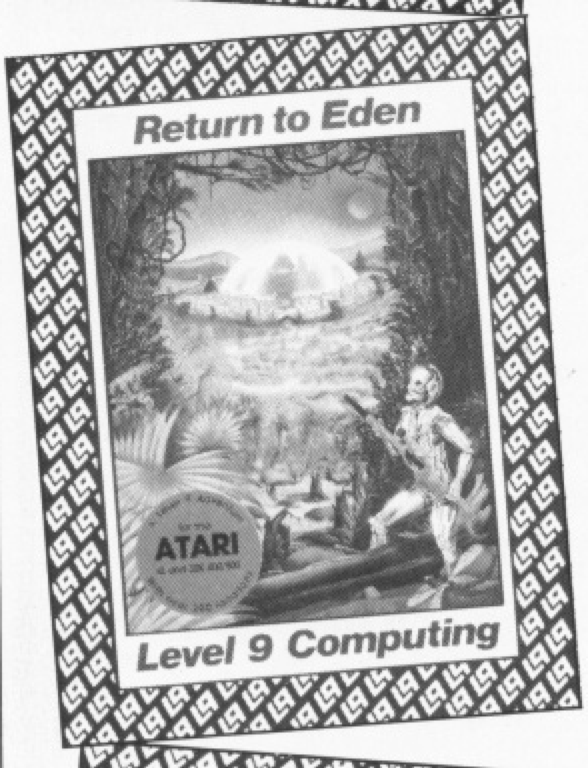
Get it right!

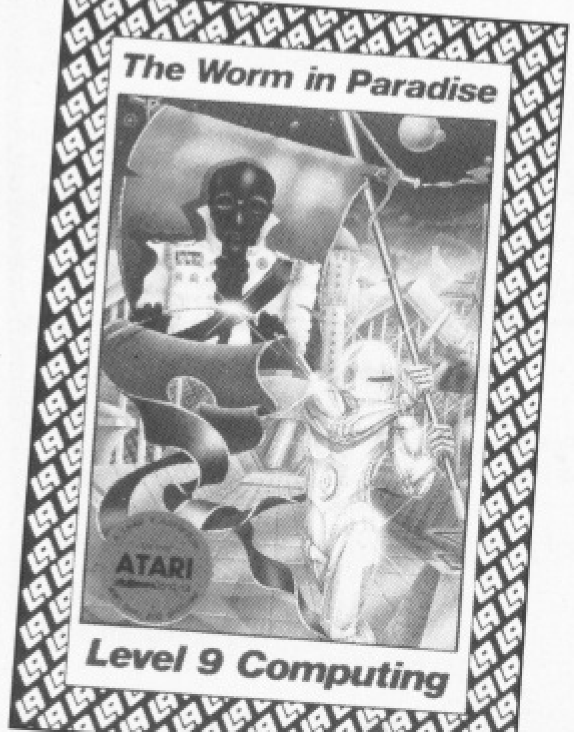
LINE	CHSUM	LINE	CHSUM	LINE	CHSUM
150	4200	160	5483	170	8009
290	2392	300	7934	310	2546
320	4715	330	13287	340	12326
350	6606	360	12773	370	18444
380	17371	390	7526	400	2116
410	9167	420	13720	430	17195
440	13697	450	16552	460	12397
470	4503	480	7415	490	2121
500	9157	510	18315	520	16955
530	12025	540	16221	550	17497
560	2126	570	5484	580	14845
590	15986	600	12073	610	6194
620	17177	630	8274	640	4503
650	5637	660	2545	670	4399
680	4647	690	17604	700	5561
710	13944	720	8485	730	15658
750	2529	760	17886	770	3863
780	4690	790	17927	800	3192
810	15984	820	3812	830	4693
840	17131	850	4650	860	15941
870	3826	880	4696	890	16606
900	4662	910	1804	920	2537
930	11716	940	12914	950	6984
960	10991	970	3886	980	16445
990	13158	1000	7296	1010	7384
1020	15901	1030	14484	1040	15722
1050	5498	1060	16574	1070	3899
1080	7321	1090	2537	1100	15679
1110	11722	1120	15035	1130	7602
1140	17721	1150	17318	1160	16584
1170	3513	1180	18032	1190	3931
1200	9065	1210	14393	1220	11674
1230	2453				

Listing overleaf

```
150 REM *** ALIEN ATTACK ***
160 REM *** ASSEMBLEY LANGUAGE ***
170 REM *** by Stephen Williamson ***
290 DATA .del
300 DATA LDY #20,LDX #100,DEX,BNE 253,
DEY,BNE 248
310 DATA .ship
320 DATA LDX 204.Z,LDY 205.Z
330 DATA LDA 632,CMP #11,BNE 5,CPX #50
,BEQ 1,DEX,CMP #7,BNE 5,CPX #198,BEQ 1
,INX
340 DATA CMP #14,BNE 5,CPY #20,BEQ 1,D
EY,CMP #13,BNE 5,CPY #209,BEQ 1,INY
350 DATA STX 204.Z,STY 205.Z,STX 53248
360 DATA LDA #24,STA 37888.Y,STA 37889
.Y,STA 37891.Y,STA 37900.Y,STA 37901.Y
370 DATA LDA #0,STA 37890.Y,STA 37887.
Y,STA 37905.Y,LDA #60,STA 37892.Y,STA
37902.Y,STA 37893.Y,STA 37903.Y
380 DATA LDA #66,STA 37894.Y,STA 37904
.Y,LDA #189,STA 37895.Y,STA 37897.Y,LD
A #195,STA 37896.Y,LDA #219
390 DATA STA 37898.Y,LDA #129,STA 3789
9.Y,RTS
400 DATA .al1
410 DATA LDA 705,CMP #53,BNE 1,RTS,LDX
 206.Z,LDY 207.Z
420 DATA LDA #231,STA 38144.Y,LDA #165
,STA 38142.Y,LDA #102,STA 38147.Y,STA
38148.Y
430 DATA LDA #66,STA 38147.Y,STA 38158
.Y,LDA #36,STA 38149.Y,STA 38150.Y,STA
 38157.Y,LDA #60,STA 38151.Y
440 DATA STA 38152.Y,LDA #24,STA 38153
.Y,STA 38154.Y,STA 38156.Y,LDA #16,STA
 38155.Y
450 DATA LDA #0,STA 38142.Y,STA 38159.
Y,LDA 20.Z,ASL A,BCS 1,INY,CPX #198,BN
E 4,LDA #0,STA 208.Z
460 DATA CPX #50,BNE 4,LDA #1,STA 208.
Z,LDA 208.Z,CMP #0,BNE 2,DEX,DEX,INX
470 DATA CPY #240,BNE 2,LDY #0
480 DATA STX 53249,STX 206.Z,STY 207.Z
,RTS
490 DATA .al2
500 DATA LDA 706,CMP #53,BNE 1,RTS,LDX
 209.Z,LDY 210.Z
510 DATA LDA #130,STA 38400.Y,STA 3840
1.Y,STA 38414.Y,LDA #214,STA 38402.Y,S
TA 38404.Y,STA 38406.Y
520 DATA STA 38408.Y,STA 38410.Y,STA 3
8412.Y,LDA #186,STA 38403.Y,STA 38405.
Y,STA 38407.Y,STA 38409.Y
530 DATA STA 38411.Y,LDA #146,STA 3841
3.Y,LDA #0,STA 38399.Y,STA 38415.Y
540 DATA LDA 20.Z,LSR A,BCS 1,INY,CPX
#198,BNE 4,LDA #0,STA 211.Z,CPX #50,BN
E 4,LDA #1,STA 211.Z
550 DATA LDA 211.Z,CMP #0,BNE 2,DEX,DE
X,INX,CPY #240,BNE 2,LDY #0,STX 53250,
STX 209.Z,STY 210.Z,RTS
560 DATA .al3
570 DATA LDA 707,CMP #53,BNE 1,RTS
580 DATA LDX 219.Z,LDY 220.Z,LDA #129,
STA 38656.Y,LDA #66,STA 38657.Y,STA 38
666.Y,LDA #102
590 DATA STA 38658.Y,LDA #126,STA 3865
9.Y,LDA #90,STA 38660.Y,LDA #60,STA 38
661.Y,STA 38662.Y
600 DATA LDA #24,STA 38663.Y,STA 38664
.Y,LDA #36,STA 38665.Y,STA 38667.Y
610 DATA LDA #0,STA 38655.Y,STA 38668.
Y
620 DATA LDA 20.Z,ASL A,BCC 28,CPX #19
8,BNE 4,LDA #0,STA 221.Z,CPX #50,BNE 4
,LDA #1,STA 221.Z,LDA 221.Z
630 DATA CMP #0,BNE 2,DEX,DEX,INX,STX
53251,INY
640 DATA CPY #240,BNE 2,LDY #0
650 DATA STX 219.Z,STY 220.Z,RTS
660 DATA .fire
670 DATA LDA 646,CMP #1,BEQ 32
680 DATA LDA 1536,CMP #1,BEQ 25
690 DATA LDX 204.Z,TXA,ADC #2,TAX,LDY
205.Z,STX 53252,LDA #1,STA 37630.Y,STA
 37631.Y,STA 1536,STY 1537
700 DATA LDY 1537,CPY #4,BNE 1,RTS
710 DATA LDY 1537,LDA #1,STA 37629.Y,S
TA 37628.Y,STA 37627.Y,LDA #0,STA 3763
1.Y,DEY
720 DATA STY 53762,LDA #170,STA 53763,
LDA #0,STA 53768
730 DATA CPY #4,BNE 12,STA 1536,STA 53
762,STA 53763,STA 53768,STA 53760,STA
53761,STY 1537,RTS
750 DATA .bomb
760 DATA LDA 20.Z,ASL A,BCC 26,LDA 153
8,CMP #4,BEQ 19,LDX 206.Z,TXA,ADC #2,T
AX,LDY 207.Z,STX 53253,LDA #4
770 DATA STA 1538,STY 1539
780 DATA LDA 705,CMP #53,BEQ 31
790 DATA LDY 1539,LDA #4,STA 37647.Y,S
TA 37648.Y,STA 37649.Y,LDA #0,STA 3764
6.Y,INY,CPY #240,BNE 4,STA 1538
800 DATA DEY,STY 1539
810 DATA BCS 26,LDA 1540,CMP #16,BEQ 1
9,LDX 209.Z,TXA,ADC #2,TAX,LDY 210.Z,S
TX 53254,LDA #16
820 DATA STA 1540,STY 1541
830 DATA LDA 706,CMP #53,BEQ 31
840 DATA LDY 1541,LDA #16,STA 37648.Y.
Y,STA 37649.Y,STA 37647.Y,LDA #0,STA 3
7646.Y,INY,CPY #240,BNE 4
850 DATA STA 1540,DEY,STY 1541
860 DATA BCC 26,LDA 1542,CMP #64,BEQ 1
9,LDX 219.Z,TXA,ADC #1,TAX,LDY 220.Z,S
TX 53255,LDA #64
870 DATA STA 1542,STY 1543
880 DATA LDA 707,CMP #53,BEQ 31
890 DATA LDY 1543,LDA #64,STA 37645.Y,
STA 37646.Y,STA 37647.Y,LDA #0,STA 376
43.Y,INY,CPY #240,BNE 4
900 DATA STA 1542,DEY,STY 1543
910 DATA RTS
920 DATA .coll
930 DATA LDA #0,LDX #12,STA 38381.X,ST
A 38637.X,STA 38893.X,DEX,BNE 244
940 DATA LDX 53260,CPX #0,BNE 24,LDX 5
3257,CPX #1,BEQ 17,LDX 53258,CPX #1,BE
Q 10
950 DATA LDX 53259,CPX #1,BEQ 3,JMP ki
ll
960 DATA LDA #0,STA 53762,STA 53763,ST
A 53768,STA 53660,STA 53761
970 DATA LDA #150,STA 39082
980 DATA LDA #55,STA 704,LDA #64,STA 5
3768,LDA #255,STA 53760,LDX #144,STX 5
3761,STX 1544,JSR del
990 DATA LDA #53,STA 710,JSR del,LDA #
0,STA 710,LDX 1544,DEX,CPX #127,BNE 22
6
1000 DATA LDX #118,STX 204.Z,LDY #150,
STY 205.Z
1010 DATA LDA #0,STA 53761,STA 53760,S
TA 53768
1020 DATA LDY #0,LDA #0,STA 37632.Y,ST
A 37888.Y,STA 38144.Y,STA 38400.Y,STA
38656.Y,INY,BNE 238
1030 DATA STA 206.Z,STA 207.Z,STA 209.
Z,STA 210.Z,STA 220.Z,STA 221.Z,LDA #2
39,STA 704
1040 DATA LDA #0,STA 1538,STA 1539,STA
 1540,STA 1541,STA 1542,STA 1543,LDA #
4,STA 1537,STA 1536
1050 DATA STA 53278,LDA #20,STA 39082
1060 DATA LDY 1546,DEY,BNE 3,PLA,PLA,R
TS,STY 1546,LDA #0,STA 24660,STA 24661
,STA 24662,STA 24663
1070 DATA CPY #1,BEQ 9,DEY
1080 DATA LDA #96,STA 24660.Y,DEY,BNE
250,RTS
1090 DATA .kill
1100 DATA LDA 53256,CMP #2,BNE 2,LDX #
0,CMP #4,BNE 2,LDX #1,CMP #8,BNE 2,LDX
 #2,CMP #0,BNE 1,RTS
1110 DATA LDA #64,STA 53768,LDA #0,STA
 53761,STA 53762,STA 53763,STA 53760
1120 DATA LDA #210,STA 53760,LDY #144,
STY 1545,STY 53761,STX 1544,LDA #53,ST
A 705.X,JSR del
1130 DATA LDX 1544,LDY 1545,DEY,CPY #1
27,BNE 228
1140 DATA LDY #0,LDA #0,STA 37632.Y,ST
A 37888.Y,STA 38144.Y,STA 38400.Y,STA
38656.Y,INY,BNE 238,STA 53278
1150 DATA LDA #0,STA 1536,STA 53760,ST
A 53761,STA 53762,STA 53763,STA 53764,
STA 53768,LDA #4,STA 1537
1160 DATA LDY 1548,CPY #25,BNE 23,LDX
1549,CPX #25,BNE 16,LDX #16,LDY #16,LD
X 1547,INX,STX 1547,DEX
1170 DATA CPX #26,BNE 14
1180 DATA LDX 1549,INX,CPX #26,BNE 9,L
DX #16,LDY 1548,INY,STY 1548,STX 1549,
STX 24646,LDY 1548,STY 24645
1190 DATA LDA 1547,STA 24644
1200 DATA LDA #0,STA 53768,STA 53760,S
TA 53761,STA 1536
1210 DATA LDA 705,CMP #53,BEQ 1,RTS,LD
A 706,CMP #53,BEQ 1,RTS,LDA 707,CMP #5
3,BEQ 1,RTS
1220 DATA LDA 39082,SBC #1,CMP #0,BNE
2,LDA #20,STA 39082,PLA,JMP clr
1230 DATA RTS,END
```







The Worm completes a Silicon Dream

By Brillig

AS promised last month here's a treat for Level 9 fans, as I shall be reviewing in varying degrees of depth the Silicon Dream trilogy, now completed with the long awaited arrival of The Worm in Paradise.

The series marks the culmination of Level 9's evolution since the arrival of Snowball with the claim of 7000 locations.

Snowball was much in the style of previous Level 9 games in that it was text only, had verb-noun input and made great play of the huge number of locations. Of the trilogy, however, it is my personal least favourite for that very reason.

The obsession that biggest is best was prevalent at that time, and indeed to some extent still is, having only been overtaken by the obsession with graphics.

That Level 9 has always been the largest adventure writers in that sense seemed to result in this claim of a huge number of locations.

In my view there is little point in having that many locations when about 6,800 are all the same. Accepting this, however, means that the player can assume the identity of Kim Kimberley and begin to solve the problems of the giant freezer ship Snowball.

You start the adventure having been automatically awakened by the ship.

You are a kind of intergalactic trouble shooter so the very fact of your awakening indicates problems. In fact there is a saboteur aboard and you have to sort him out to save the 1,800,000 (minus you) frozen bodies en route to the planet Eradani A to start a new life.

The adventure is set in the 23rd century, and is based very loosely on the Larry Niven novel "The Mote in God's Eye". With the exception of the beginning of the program it is a highly believable impression of how such an enterprise might be conducted.

It is the rather tedious start to the game which made it difficult to get into. For instance, it seemed illogical to me that as the "sleeper" placed aboard in the event of trouble, the ship's security systems should activate "nightingales" to despatch you to a somewhat more permanent sleep on discovering you are awake!

Once out of the initial stages the game seems well structured and has a sense of purpose – much better than some games with just trolls to bash or a few treasures to locate.

The plot and implementation mean that 7000 locations are a bit excessive, and the spelling is not all it could be. Although there are uses for most objects not all are essential, and once the initial code cracking is done the game is a little too straight line in logic for my liking.

If, as I was, you have been stuck at the beginning for some time, a few hints may be in order. After you have pushed the lever and said Out to leave the coffin you should go north and push three buttons in turn.

Go back south, get up on to the coffin from where you can go up to the mortuary. Remember always to keep a closed door between you and the nightingales, and keep still when they are around.

Nightingales will only enter blue

mortuaries on the white level for some reason (which Kim Kimberley ought to know).

Final hint: If you want to get out of the mortuary area you should look for a lift.

In Return to Eden we discover that not only are the occupants of Snowball an ungrateful lot, in that you have been framed for the murder of the crewman and sentenced to death, but that the planet Eden on which your stratoglider has landed has most definitely gone to seed.

This game marked Level 9's first departure into graphics on several machines, although Atari owners were spared this doubtful privilege until Red Moon.

Again the idea is taken in part from a famous sci-fi author, this time Harry Harrison's Deathworld. Your task is to clear your name with the occupants of the city of Enoch, both physical and mechanical, utilising the flora and fauna.

This gives rise to some devious problems and to some quite dreadful yet enjoyable puns. The only slight problem I had with the game was again one of logic at the start.

It seemed a little odd that rather than use the conventional way of killing people the crew of Snowball suffers from the James Bond villain syndrome.

This entails using the most convoluted and complicated method imaginable of causing the hero's death. Hence rather than shoot him/her they try to burn you with the engines as they fly past! A little implausible, I would say.

The engines incidentally, can be avoided by burrowing underground.

Other than this fairly minor gripe Return to Eden is by far the best of the three games in my opinion and can be played without having endured Snowball since a resume is included in the instructions.

All this has left me rather short of space for Worm in Paradise. The new Level 9 adventure system is a wonder of programming, with the type-ahead an absolute boon. Again I find the graphics a little too Spectrum-like and rapidly turned them off.

In Worm you play a citizen in the next century and aspire to the Seat of Power. I'm not sure if the game is a true reflection of Pete Austin's political leanings – a little to the right of Genghis Khan – but the game has a political slant.

Doubtless I shall return to this game fairly soon when I have made a little more progress, but so far Return to Eden is the best of the three for me.

★ ★ ★

Final note. A couple of licensing deals have been brought to my attention. Adventure International has signed up with US Gold, so we may see Questprobe III at last, and Bignose Software has signed up with S.E.C.S. (yes, that's how I pronounced it too). They'll be previewing at least one new adventure at the Atari User Show.

● *Next month I shall look at Adrian Mole from Mosaic/Level 9 and hopefully have received a glitch or two.*

Move over Atariwriter... here comes Superscript

– says André Willey

WORD processing is probably the first serious application that any home computer will be put to. Like most other micros, there is a glut of word processing packages for the Atari, some more versatile than others, some easier to use, some faster, and so on.

The "standard" word processor has for some years been Atari's own Atariwriter cartridge, which is very easy to use and reasonably versatile. It was designed to run with 16k machines, and worked pretty well within those limitations.

Now that the 800XL and 130XE, with 64k and 128k respectively, are available, it was only a matter of time before a new program would be written which would use these new facilities to the full. Such a package is Superscript, written by Precision Software and marketed by MicroPro, the makers of Wordstar.

Let's get the bad news out of the way first. Since Superscript requires a minimum of 64k, and preferably 128k, you can't use it if you have an old series Atari 400 or 800. It would not have been possible to pack all of the features into a 48k machine and still have any space left to store your documents.

The other piece of bad news is that it only comes on disc, but, quite frankly, I feel that anyone who is seriously considering word processing must realise that a disc drive is an essential item anyway.

Even though discs are pretty reliable, I feel that MicroPro has let the users down badly when it comes to back-ups. When paying this much for a program you would expect either a back-up to be provided at nominal cost, or, as you are told in the licence agreement, that you should always make a back-up before using the product.

Even though you are warned to make five back-up copies to be completely safe, the program disc is quite heavily copy-protected, leaving you somewhat in the lurch if your disc is damaged. Come on MicroPro, be fair to the customers who pay your wages!

If I were to describe every feature that Superscript has to offer, there wouldn't be enough space in the magazine to print it.

The fully ring-bound manual provided is over 240 pages long, and I couldn't hope even to paraphrase it here.

It is split into sections, starting with a couple of tutorials on major aspects of the package, then going into advanced use, and finally a very comprehensive reference section – some 100 pages in itself.

Unfortunately, despite all of MicroPro's promises, there is no quick reference card, a serious omission in a package of this nature.

Once you've booted up your master disc – which, partly due to the copy-protection used, seems to take forever – you may create your first work disc. This will be formatted in DOS 2.5 mode, even to the extent of using enhanced density if possible, and will contain your documents and your printer-driver file.

The file can be set up from the 11 types provided, including all of the Atari printers, Epson, Diablo, NEC and so on, or customised in any way you wish for your own printer. Unusually you can even use an RS232 printer.

> ***It will support the full international character set, dozens of print modes, spacings and character sizes.***

Assuming that your printer handles them, Superscript will support the full international character set, dozens of print modes, spacings, character sizes and so on and any special features such as italics or download sets that your printer can offer.

By far the most popular non-Atari printers in use are the Epson range, and I use an Epson-compatible NLQ printer with which I found that all of the international characters print exactly as seen on the screen – which means that I can at last write André rather than Andre!

The same goes for that elusive £ sign. New printer-drivers can, of course, be loaded at will, a feature which would allow you to attach a serial and a parallel printer at the same time – perhaps a daisywheel and a dot matrix – and switch between them with ease.

Once on to the main screen, the colours of which you can customise via the default file, just as you can margins, centering and justification, you can start typing.

As with most word processors, you just type in your text with no thought of line format, and the only time you need to hit the Return key is to signify the end of a paragraph.

Words will be moved down automatically to the next line if there isn't room for them on the current one.

I found that sometimes the time taken to insert new text within a long document was rather greater than I'd have liked, with frequent four or five second pauses while it freed up some line space.

This could become a little annoying at times – like now, when I am adding an extra bit half way through a

→

review.

When I said long document, by the way, I meant just that. On a 130XE there are two separate text buffers, each 780 lines long (about 64k in total). This review takes up just over 300 screen lines, or about 200 lines by the time it's printed out on an 80 column printer.

I managed to re-load it five times before I ran out of memory – that's about 1000 printed lines. On an 800XL you get about half that, and on Atariwriter you get a measly 200 to 250 printed lines, or about 16k.

Working within the limitations of 40 columns of text is normally somewhat tricky when you think that the printout will be re-formatted to use 80 columns.

This means that typing a table requiring, say, 70 columns of text is almost impossible. Thankfully, an option has been added to set the line length to any size up to 240 characters. You simply scroll a 40 column window over the text, and any tables can been seen laid out correctly.

This is especially useful when you realise that Superscript has a calculator function built in, giving it many of the basic functions of a spreadsheet.

All you need to do is lay the numbers for your table out in rows and columns, and Superscript will total them for you, taking both negative numbers and bracketed numbers as subtractions.

It will also allow you to handle

“An easy way out of a tiresome menu-selection procedure.”

multiplication, division and percentages before you even enter the figures on to the page, via a mini calculator feature. If all this sounds a little complicated to grasp, which perhaps it is until you get used to it, there are examples on the disc and exercises in the manual to help you out.

Every time you want to use a feature such as the calculation facility you press the Select button to bring up the main menu, from which you go to other menus as required.

There are 11 options, each of which leads to a sub-menu, and a help function. This can also be obtained at any time by hitting the Help key.

Selection of items from the menu is possible in two ways. The beginner

“The beginner may find some features hidden under the most unexpected menu titles.”

can highlight each feature with the cursor keys and hit Return when they've made their choice. This procedure can become tiresome very quickly, so you can just as easily type the first letter of the option. For example, instead of moving the cursor to Document (Return), then to Load (Return), all you need type is DL.

At first you need to look at each new menu to see what your options are, but after a few days you find yourself using only the abbreviations.

My only criticism is that a beginner, who is bound to start by reading the menus, may find some features hidden under the most unexpected menu titles. For instance, would you really expect a heading of Set to give you a sub-menu including all of the quite comprehensive search and replace options?

Once you're used to it, though, such obscure operations as setting a new margin – Select's main menu, then Layout, then Margins, and finally Left – become as easy as Select LML.

If, after all this, you still find that some common operations take longer than you'd like, then you can always define Macros, which allow you to execute a whole series of command and text entries with a single keystroke.

You may wish to put your full name, in bold face, on the key N, for instance. The possibilities are endless.

Another important feature of Superscript is a very powerful mailmerge. This is the ability to use a standard letter and make the computer print multiple copies with different names and addresses on each, and perhaps personalised with Dear xxxx.

You may use either a file you've written yourself via Superscript, or merge with a database, such as SynFile+ or FileManager 800, or any other that can create label-type output files, with one field per line.

You may use any or all of the fields at any position within the letter, and even use fields more than once.

Fields can be variable or fixed length – to fill address lines or tables – and even conditional, which will allow names and addresses to be printed with variable numbers of lines. You can even specify to skip certain records.

One slight problem in this area is the need to limit the size of your merge file to fit within your RAM, or to link two files with the LINK option.

This would preclude the easy use of very long – over a couple of hundred records – database merges without first modifying the merge file, which would involve you in extra work.

Spell-check, of course, is not overlooked, and you can configure your 30,000 word dictionary disc for either British or American spellings. This is a godsend for anyone who has been driven up the wall by the computer politely informing you that you've spelt colour wrongly.

You can also add or delete dictionary words whenever you like.

Spell check can even give you statistics, such as number of words, number of unique words, number of paragraphs, average word length, and even a breakdown of how many times every word in your document has been used. There is no near-miss checking, but that really is the province of much larger systems.

All of the normal block manipulations are present, which include define block (or column table), move, duplicate, save or delete block, erase character, word, sentence, rest-of-line, full-line, paragraph, rest of document or whole document. The list is endless.

You can even have two documents in memory at the same time (if you've got 128k) and freely move text between them both, which is especially useful in mailmerge mode.

So far, I have only listed the major features, but there is so much more.

You can set headers and footers to print at the top and bottom of each page (which can contain up to three parts, left-aligned, centred, and right-aligned).

Page numbers are catered for, and Superscript will adjust its settings automatically for you to make odd and even numbered pages have larger central margins and adjusted header/footer settings ready for binding into book form.

Movement within a document can be either relative or absolute. You may go to the top/bottom of the text, or move up/down a screen or to the left/right of a line, or forward/backward by words, sentences or paragraphs.

Tab positions can be set both across and down the page. You may use overtype or insert mode for text entry, with hard or soft hyphens and spaces, and use the normal cursor keys (with or without using the Control key – the choice is yours).

There are keys to change whole

> ***Every silver lining has a cloud, and Superscript is no exception.***

words to upper/lower case, change the screen colours, add non-printing comments (useful), and use multiple levels of indent for sub-headings.

Unfortunately every silver lining has a cloud, and Superscript is no exception.

I was hoping that this paragraph would not be necessary, because for once I received an early beta-test copy of the program, and was invited to comment on any faults that I found.

This I duly did, explaining a couple of very easy-to-fix problems, but ones which were very annoying in general use.

Thus Precision Software had a full three months to fix them before the final release came out – right? Wrong! It seems I was wasting my time explaining to them how an Atari works, and thus there are a number of little problems.

Firstly, and most frustrating of all, the Delete key's function is slightly different to the normal Atari one. When any Atari user hits Control-Delete, he would expect the character under the cursor to be deleted, but in Superscript, for reasons known only unto themselves, it deletes the character to the left.

As an additional function, this would be fine, but when you're so used to the normal operation of your computer it really can be quite annoying.

This problem can also cause text to back-up into the previous paragraph – even to the extent of packing two short paragraphs on to one line, or leaving multiple spaces within a document.

The re-format option will not correct this, so unless you happen to notice it, anything after the first end-of-paragraph marker will not be printed.

The really daft thing is that the manual doesn't even mention Control-Delete, and only talks about Shift-Delete, which apparently does exactly the same thing! So why change it in the first place? Your guess is probably as good as mine!

Of course, if you do finally get used to it, heaven help you if you then want to do some ordinary programming afterwards.

The other main problem I warned them about is extremely silly, but has several nasty repercussions. Thankfully a slightly knowledgeable Atari owner could spot and correct it quite quickly, but that's not really the point, is it?

The printer driver files each contain a character to tell the printer to do a Carriage Return (or EOL, as it is sometimes known). Precision apparently put this in because the Atari range of printers is listed as using the Atari internal code of 155, whereas most printers use code 13.

However, what they totally forgot is that any use of code 155 is translated automatically into a code 13 by the Centronics or RS-232 interface anyway.

Thus code 13 should never be used as an EOL, because the operating system won't know that the line has been finished, and will then add its own EOL just to make sure.

Thus, at the end of a printout, it adds an extra Carriage Return (of the correct 155 type) when the last line is printed. The next page you print will then be one line lower, and so on.

On either a multiple-copy printout, or even a shortish mailmerge, each page is printed one line lower down than the last, until about 30 letters later it starts printing over half-way down the page.

Also, the "Store printout on disc" won't work at all, which is really frustrating if you want to use Superscript to prepare formatted files for use with another package, such as uploading via a Comms package, use with a database or in with your own programs.

If you come across anything like this, and you're not one of the few people using an Atari model printer, try changing the 13 to a 155 in your printer-driver file.

Perhaps one of the six or seven

> ***In terms of value for money it really cannot be beaten.***

people I spoke to at Precision and MicroPro will actually take note of these points before the next revision of the product is released?

Anyway, regardless of these few problems, I found Superscript to be a generally excellent product, giving more features than any other word processor I've come across for the Atari.

Unfortunately, due to the added support being provided by MicroPro, they have seen fit to raise the price to £79.95, which will put it out of the price range of some prospective users, although in terms of value for money it really can't be beaten.

While it may seem to be twice the price of Atariwriter, by the time you've added the cost of a printer-driver and a good spell check program, there's not really anything in it.

If all you want to do is type the odd letter, then Atariwriter is probably more up your street, but I can wholeheartedly recommend Superscript to anyone who is thinking of using their Atari for any sort of serious word processing, and certainly to anyone who is a little fed up with the limitations of Atariwriter.

Anyway, assuming the Delete bug is soon cured, I know which word processor I'll be using in future.

HORSE PLAY

By MALCOLM IREDALE

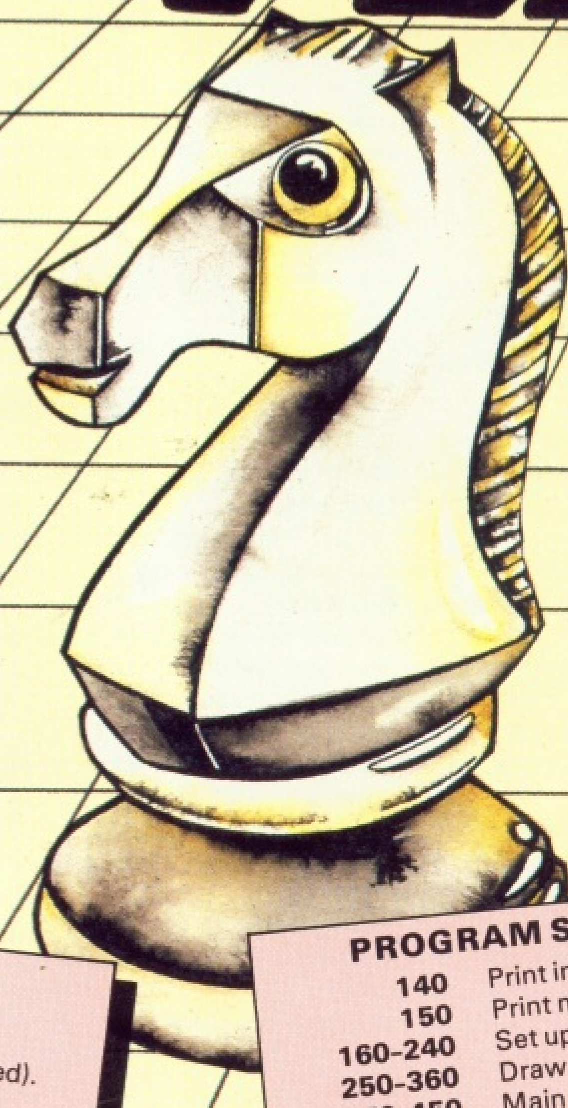
THE Knight's Tour is a classic problem involving a chess board and a single knight. It involves moving the knight in its normal fashion in such a way that each square on the chess board is visited once only. To successfully complete the tour you must visit every square on the board.

In this version you use the joystick to move a cross-wire cursor. When you're on the desired square press the fire button. The knight will move to that square and the previous square occupied will be blacked in.

The program won't let you make an illegal move or visit the same square twice. It will also check to see if you're stuck. You can leave the program at any time by pressing any key on the keyboard.

I wrote the program using a monitor instead of a TV, so the colours used may not be to your liking. If this is the case, you can easily change them by altering the values in line 230.

The Knight's Tour is possible but by no means easy. When you've managed it from the normal starting point, see if you can still do it from a random starting point.



MAJOR VARIABLES

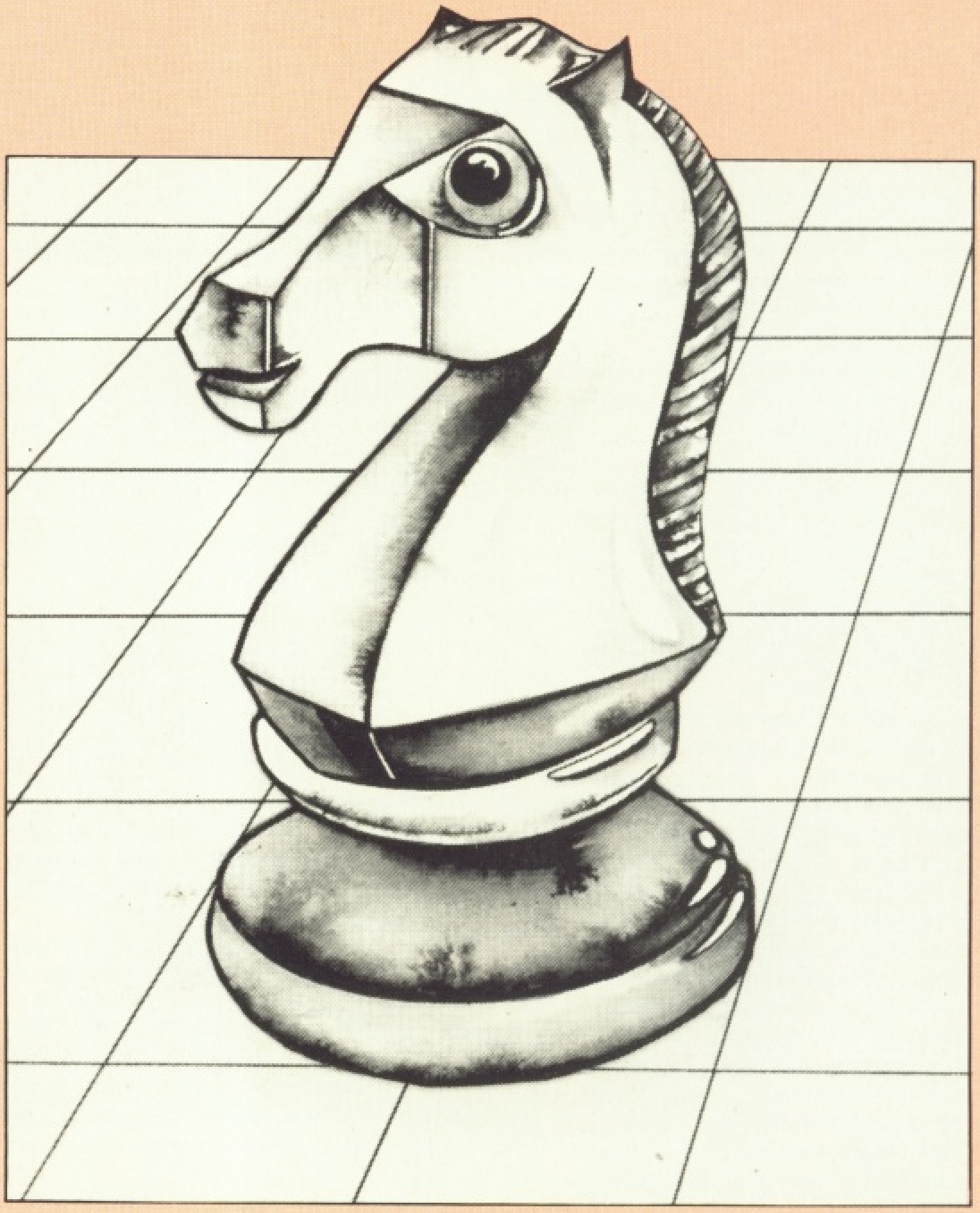
Variable	Description
LTORANGE, ORANGE, BLACK, WHITE	Colour variables (can be changed).
X, Y	Position of knight.
XX, YY	Position of cross wires.
C, K	Colour flags for erasure routine.
G, H, N, M	Plot/Draw coordinates.
COUNT	Variable for number of squares filled.
MENU	Holds menu status – Random/Normal.
S	Value of joystick.
ST	Value of fire button.

PROGRAM STRUCTURE

Lines	Description
140	Print instructions.
150	Print menu.
160-240	Set up variables.
250-360	Draw screen.
370-450	Main movement routine.
460-610	Draw small knight.
630	Draw cross-wire.
650	Erase cross-wire.
660-760	Move knight.
770-920	Check if stuck.
930-1150	End routine.
1160-1270	Fill in square black.
1280-1490	Print instructions and menu.
1500-2090	Plot letters.
2100-2150	Restart program.
2160-2560	Draw big knight.
2570-2600	Print "Press fire".
2610-2640	Print "Well done".
2650-2680	Clears screen cleverly.

```
100 REM ***************************
110 REM ******* HORSE PLAY *********
120 REM ****** By M.IREDALE ********
130 REM ***************************
140 GOSUB 1290
150 GOSUB 1430
160 IF MENU=1 THEN X=0:Y=15:GOTO 200
170 I=INT(RND(0)*86)+1:II=INT(RND(0)*7
6)+6
180 X=((INT(I/11)*11))
190 Y=((INT(II/11)*11))+15
200 D=X:F=Y
210 REM **** INITIALISE VARIABLES ****
**
220 GRAPHICS 7+16
230 LTORANGE=56:ORANGE=38:BLACK=0:WHIT
E=220:XX=11:YY=26:C=2:K=3:H=63:COUNT=1
:N=95:M=58
240 POKE 712,LTORANGE:POKE 708,ORANGE:
POKE 709,BLACK:POKE 710,WHITE
250 REM ********** GRID *********
260 COLOR 1:FOR I=4 TO 92:PLOT 0,I:DRA
WTO 88,I:NEXT I
270 COLOR 3:FOR I=0 TO 92 STEP 11
280 PLOT I,4:DRAWTO I,91:NEXT I
290 FOR I=4 TO 98 STEP 11
300 PLOT 0,I:DRAWTO 88,I:NEXT I
310 FOR I=4 TO 60:PLOT 95,I:DRAWTO 151
,I:NEXT I
320 COLOR 2:FOR I=4 TO 60 STEP 7:PLOT
95,I:DRAWTO 96,I:NEXT I
330 PLOT 95,4:DRAWTO 95,60:DRAWTO 151,
60:DRAWTO 151,4:DRAWTO 95,4
340 G=108:GOSUB 1630:G=115:GOSUB 2020:
G=122:GOSUB 1840:G=126:GOSUB 1690:G=13
5:GOSUB 2050
350 H=73:G=99:GOSUB 2080:G=107:GOSUB 1
990:G=116:GOSUB 1510:G=129:GOSUB 1750:
G=137:GOSUB 1630:G=144:GOSUB 1510:H=63
360 GOSUB 470:GOSUB 630:POKE 764,255:G
OSUB 2660
370 REM **** MOVEMENT ROUTINE ******
380 S=STICK(0):ST=STRIG(0):IF ST=0 THE
N GOSUB 670:GOSUB 470:GOSUB 630:IF X=X
X AND Y=YY THEN GOSUB 780
390 IF PEEK(764)<>255 THEN GRAPHICS 2+
16:POKE 712,LTORANGE:POKE 708,BLACK:PO
KE 709,WHITE:GOTO 1110
400 IF S=13 AND YY<90 THEN GOSUB 650:Y
Y=YY+11:GOSUB 630
410 IF S=14 AND YY>15 THEN GOSUB 650:Y
Y=YY-11:GOSUB 630
420 IF S=11 AND XX>0 THEN GOSUB 650:XX
=XX-11:GOSUB 630
430 IF S=7 AND XX<67 THEN GOSUB 650:XX
=XX+11:GOSUB 630
440 GOTO 380
450 GOTO 450
460 REM ******** DRAW KNIGHT ********
470 COLOR 2
480 PLOT X+5,Y-10:DRAWTO X+7,Y-10
490 PLOT X+4,Y-9:DRAWTO X+8,Y-9
500 PLOT X+3,Y-8:DRAWTO X+9,Y-8
510 PLOT X+2,Y-7:DRAWTO X+9,Y-7
520 PLOT X+1,Y-6:DRAWTO X+10,Y-6
530 PLOT X+1,Y-5:DRAWTO X+10,Y-5
540 PLOT X+1,Y-4:DRAWTO X+3,Y-4
550 PLOT X+7,Y-4:DRAWTO X+9,Y-4
560 REM :PLOT X+2,Y-3:DRAWTO X+3,Y-3:P
LOT X+5,Y-3:DRAWTO X+9,Y-3
570 PLOT X+5,Y-3:DRAWTO X+9,Y-3
580 PLOT X+4,Y-2:DRAWTO X+8,Y-2
590 PLOT X+3,Y-1:DRAWTO X+8,Y-1
600 COLOR C+1:PLOT X+5,Y-8:COLOR 1
610 RETURN
620 REM ****** DRAW CROSS ********
630 COLOR K:PLOT XX+2,YY-5:DRAWTO XX+1
0,YY-5:PLOT XX+6,YY-9:DRAWTO XX+6,YY-1
:RETURN
640 REM ********* ERASE CROSS *******
650 LOCATE XX+2,YY-4,K:GOSUB 630:K=3:R
ETURN
660 REM ******* MOVE KNIGHT *********
670 LOCATE XX+1,YY-1,J:IF J<>1 THEN RE
TURN
680 IF YY=Y-22 AND XX=X+11 THEN GOSUB
1170:X=XX:Y=YY
690 IF YY=Y-11 AND XX=X+22 THEN GOSUB
1170:X=XX:Y=YY
700 IF YY=Y+11 AND XX=X+22 THEN GOSUB
1170:X=XX:Y=YY
710 IF YY=Y+22 AND XX=X+11 THEN GOSUB
1170:X=XX:Y=YY
720 IF YY=Y+22 AND XX=X-11 THEN GOSUB
1170:X=XX:Y=YY
730 IF YY=Y+11 AND XX=X-22 THEN GOSUB
1170:X=XX:Y=YY
740 IF YY=Y-11 AND XX=X-22 THEN GOSUB
1170:X=XX:Y=YY
750 IF YY=Y-22 AND XX=X-11 THEN GOSUB
1170:X=XX:Y=YY
760 RETURN
770 REM ***** CHECK IF STUCK ********
780 TRAP 790:LOCATE XX+12,YY-23,A:IF A
=1 THEN RETURN
790 TRAP 810
800 LOCATE XX+23,YY-12,A:IF A=1 THEN R
ETURN
810 TRAP 830
820 LOCATE XX+23,YY+10,A:IF A=1 THEN R
ETURN
830 TRAP 850
840 LOCATE XX+12,YY+21,A:IF A=1 THEN R
ETURN
850 TRAP 870
860 LOCATE XX-10,YY+21,A:IF A=1 THEN R
ETURN
870 TRAP 890
880 LOCATE XX-21,YY+10,A:IF A=1 THEN R
ETURN
890 TRAP 910
900 LOCATE XX-21,YY-12,A:IF A=1 THEN R
ETURN
910 TRAP 940
920 LOCATE XX-10,YY-23,A:IF A=1 THEN R
ETURN
930 REM ******** END ROUTINE ********
940 POP :GOSUB 650
950 G=89:GOSUB 1510:G=96:GOSUB 1540:G=
104:GOSUB 1570:G=109:GOSUB 1780:G=114:
GOSUB 1600:G=121:GOSUB 1630
960 G=128:GOSUB 1660:G=134:GOSUB 1690:
G=141:GOSUB 1570:G=147:GOSUB 1720:G=15
4:GOSUB 1750:GOSUB 2580
970 FOR I=0 TO 3000
980 IF STRIG(0)=0 THEN I=8000
990 NEXT I
1000 GRAPHICS 2+16:POKE 712,LTORANGE:P
OKE 708,BLACK:POKE 709,WHITE:FOR I=0 T
O 100:NEXT I
1010 IF COUNT<8 THEN POSITION 1,1:? #6
;"THAT WAS PATHETIC.":POSITION 1,3:? #
6;"YOU ONLY FILLED ";COUNT:POSITION 6,
5:? #6;"SQUARES"
1020 IF COUNT<16 AND COUNT>7 THEN POSI
TION 2,1:? #6;"NOT MUCH BETTER,":POSIT
ION 2,3:? #6;"BUT KEEP TRYING."
1030 IF COUNT>15 AND COUNT<32 THEN POS
ITION 1,1:? #6;"NEARLY HALF WAY EH!":P
OSITION 5,3:? #6;"KEEP GOING"
1040 IF COUNT>31 AND COUNT<40 THEN POS
ITION 0,1:? #6;"THINK YOU'RE GETTING":
POSITION 3,3:? #6;"BETTER DO YOU?"
1050 IF COUNT>39 AND COUNT<48 THEN POS
ITION 5,1:? #6;"WELL DONE!":POSITION 3
,3:? #6;"YOU ARE BETTER"
1060 IF COUNT>47 AND COUNT<56 THEN POS
ITION 1,1:? #6;"VERY LUCKY TO GET":POS
ITION 1,3:? #6;"THAT FAR I THINK."
1070 IF COUNT>55 AND COUNT<64 THEN POS
ITION 2,1:? #6;"NEARLY DID IT EH":POSI
TION 2,3:? #6;"YOU SHOULD DO IT"
1080 IF COUNT>55 AND COUNT<64 THEN POS
ITION 5,5:? #6;"NEXT TIME."
1090 IF COUNT>63 THEN POSITION 2,0:? #
6;"CONGRATULATIONS!":POSITION 3,2:? #6
;"YOU'VE DONE IT."
1100 IF COUNT>63 THEN POSITION 1,4:? #
6;"BET YOU DON'T KNOW":POSITION 3,6:?
#6;"HOW YOU DID IT"
1110 POSITION 3,8:? #6;"NUMBER LEFT ="
;64-COUNT:POSITION 5,10:? #6;"PRESS fi
re"
1120 POSITION 7,11:? #6;"MENU=M"
1130 IF PEEK(764)=37 THEN GOTO 150
1140 IF STRIG(0)=1 THEN 1110
1150 GOTO 2110
1160 REM ****** FILL SQUARE **********
1170 POKE 77,0:COLOR 2:FOR I=10 TO 1 S
TEP -1:PLOT X+1,Y-I:DRAWTO X+10,Y-I:NE
XT I
1180 COUNT=COUNT+1
1190 IF COUNT=8 THEN GOSUB 2170
1200 IF COUNT=16 THEN GOSUB 2210
1210 IF COUNT=24 THEN GOSUB 2270
1220 IF COUNT=32 THEN GOSUB 2320
1230 IF COUNT=40 THEN GOSUB 2380
1240 IF COUNT=48 THEN GOSUB 2450
1250 IF COUNT=56 THEN GOSUB 2490
1260 IF COUNT=64 THEN X=XX:Y=YY:GOSUB
470:GOSUB 2530:COLOR 2:GOSUB 2620:GOSU
B 2580:GOTO 970
1270 RETURN
1280 REM ****** INSTRUCTIONS *********
1290 GRAPHICS 1+16:POKE 712,146:POKE 7
08,12
1300 POSITION 4,0:? #6;"instructions."
1310 POSITION 1,2:? #6;"MOVE THE CROSS
 FROM"
1320 POSITION 1,4:? #6;"THE TOP LEFT C
ORNER"
```

```
1330 POSITION 1,6:? #6;"FOLLOWING THE
MOVE"
1340 POSITION 1,8:? #6;"OF A KNIGHT PI
ECE"
1350 POSITION 6,10:? #6;"IN CHESS."
1360 POSITION 1,12:? #6;"PRESS FIRE TO
 MOVE."
1370 POSITION 1,14:? #6;"TRY TO FILL A
LL THE"
1380 POSITION 1,16:? #6;"SQUARES BY LA
NDING"
1390 POSITION 1,18:? #6;"ON THEM ONLY
ONCE."
1400 POSITION 1,22:? #6;"PRESS FIRE TO
 START"
1410 IF STRIG(0)=0 THEN RETURN
1420 GOTO 1410
1430 GRAPHICS 1+16:POKE 712,146:POKE 7
08,12
1440 POSITION 2,8:? #6;"RANDOM START=
R"
1450 POSITION 2,10:? #6;"NORMAL START=
 N"
1460 POSITION 8,6:? #6;"MENU"
1470 IF PEEK(764)=35 THEN MENU=1:RETUR
N
1480 IF PEEK(764)=40 THEN MENU=2:RETUR
N
1490 GOTO 1470
1500 REM ******* DRAW 'Y' ************
1510 PLOT G,H:PLOT G,H+1:DRAWTO G+3,H+
4:DRAWTO G+6,H+1:PLOT G+6,H:PLOT G+3,H
+4:DRAWTO G+3,H+6
1520 RETURN
1530 REM ******* DRAW 'O' ************
1540 PLOT G+2,H:DRAWTO G+4,H:DRAWTO G+
6,H+2:DRAWTO G+6,H+4:DRAWTO G+4,H+6:DR
AWTO G+2,H+6:DRAWTO G,H+4:DRAWTO G,H+2
:DRAWTO G+2,H
1550 RETURN
1560 REM ******* DRAW 'U' ************
1570 PLOT G,H:DRAWTO G,H+6:DRAWTO G+4,
H+6:DRAWTO G+4,H
1580 RETURN
1590 REM ******* DRAW 'R' ************
1600 PLOT G,H:DRAWTO G,H+6:PLOT G,H:DR
AWTO G+4,H:DRAWTO G+6,H+2:DRAWTO G+4,H
+4:DRAWTO G,H+4:PLOT G+4,H+5:DRAWTO G+
5,H+6
1610 RETURN
1620 REM ******* DRAW 'E' ************
1630 PLOT G+4,H:DRAWTO G,H:DRAWTO G,H+
6:DRAWTO G+4,H+6:PLOT G,H+3:DRAWTO G+3
,H+3
1640 RETURN
1650 REM ******* DRAW 'S' ************
```



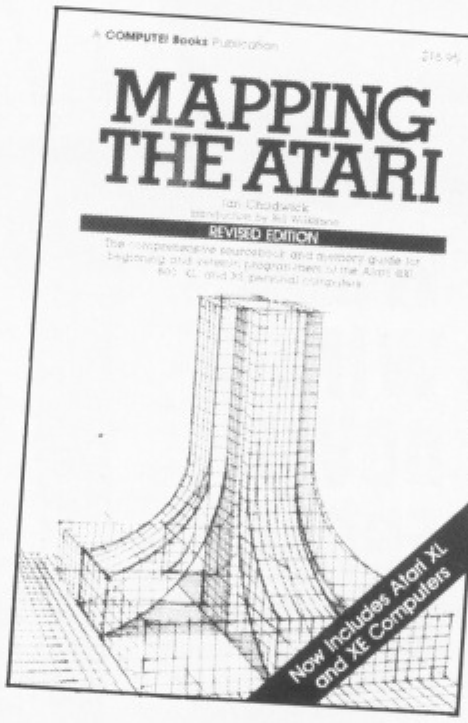
```
1660 PLOT G+5,H:DRAWTO G+2,H:DRAWTO G+
1,H+1:DRAWTO G+1,H+2:DRAWTO G+2,H+3:DR
AWTO G+5,H+3
1665 DRAWTO G+6,H+4:DRAWTO G+6,H+5:DRA
WTO G+5,H+6:DRAWTO G+1,H+6
1670 RETURN
1680 REM ******* DRAW 'T' ************
1690 PLOT G+1,H:DRAWTO G+5,H:PLOT G+3,
H:DRAWTO G+3,H+6
1700 RETURN
1710 REM ******* DRAW 'C' ************
1720 PLOT G+5,H+1:DRAWTO G+4,H:DRAWTO
G+2,H:DRAWTO G,H+2:DRAWTO G,H+4:DRAWTO
 G+2,H+6:DRAWTO G+4,H+6:DRAWTO G+5,H+5
1730 RETURN
1740 REM ******* DRAW 'K' ************
1750 PLOT G,H:DRAWTO G,H+6:PLOT G+1,H+
4:DRAWTO G+5,H:PLOT G+3,H+4:DRAWTO G+5
,H+6
1760 RETURN
1770 REM ******* DRAW ''' ************
1780 PLOT G+2,H:DRAWTO G+3,H:DRAWTO G+
3,H+2
1790 RETURN
1800 REM ******* DRAW 'P' ************
1810 PLOT G,H+6:DRAWTO G,H:DRAWTO G+3,
H:DRAWTO G+4,H+1:DRAWTO G+4,H+3:DRAWTO
 G+3,H+4:DRAWTO G+1,H+4
1820 RETURN
1830 REM ******* DRAW 'I' ************
1840 PLOT G+2,H:DRAWTO G+2,H+6
1850 RETURN
1860 REM ******* DRAW 'F' ************
1870 PLOT G+5,H:DRAWTO G,H:DRAWTO G,H+
6:PLOT G+1,H+3:DRAWTO G+3,H+3
1880 RETURN
1890 REM ******* DRAW 'W' ************
1900 PLOT G,H:DRAWTO G,H+5:DRAWTO G+1,
H+6:DRAWTO G+5,H+6:DRAWTO G+6,H+5:DRAW
TO G+6,H:PLOT G+3,H+5:DRAWTO G+3,H
1910 RETURN
1920 REM ******* DRAW 'L' ************
1930 PLOT G,H:DRAWTO G,H+6:DRAWTO G+5,
H+6
1940 RETURN
1950 REM ******* DRAW 'D' ************
```

```
1960 PLOT G+3,H:DRAWTO G,H:DRAWTO G,H+
6:DRAWTO G+3,H+6:DRAWTO G+5,H+4:DRAWTO
 G+5,H+2:DRAWTO G+3,H
1970 RETURN
1980 REM ******* DRAW 'N' ************
1990 PLOT G+1,H+6:DRAWTO G+1,H:DRAWTO
G+6,H+6:DRAWTO G+6,H
2000 RETURN
2010 REM ******* DRAW 'X' ************
2020 PLOT G,H:DRAWTO G+6,H+6:PLOT G+6,
H:DRAWTO G,H+6
2030 RETURN
2040 REM ******* DRAW '=' ************
2050 PLOT G,H+2:DRAWTO G+5,H+2:PLOT G,
H+4:DRAWTO G+5,H+4
2060 RETURN
2070 REM ******* DRAW 'A' ************
2080 PLOT G,H+6:DRAWTO G+3,H:DRAWTO G+
6,H+6:PLOT G+2,H+4:DRAWTO G+5,H+4
2090 RETURN
2100 REM ******* RE START PROGRAM ****
2110 IF MENU=2 THEN GOTO 170
2120 POP :GRAPHICS 7+16:XX=11:YY=26:C=
2:K=3:H=63:COUNT=1
2130 POKE 712,LTORANGE:POKE 708,ORANGE
:POKE 709,BLACK:POKE 710,WHITE
2140 X=D:Y=F
2150 GOTO 260
2160 REM ***** DRAW BIG KNIGHT *******
2170 COLOR 2:PLOT N+33,M-51:DRAWTO N+3
4,M-51:PLOT N+32,M-50:DRAWTO N+35,M-50
:PLOT N+30,M-49:DRAWTO N+34,M-49
2180 PLOT N+30,M-48:DRAWTO N+33,M-48
2190 PLOT N+28,M-47:DRAWTO N+32,M-47:P
LOT N+34,M-47:RETURN
2200 REM *****************************
2210 COLOR 2:PLOT N+26,M-46:DRAWTO N+3
1,M-46:PLOT N+33,M-46:DRAWTO N+36,M-46
:PLOT N+24,M-45:DRAWTO N+38,M-45
2220 DRAWTO N+23,M-44
2230 DRAWTO N+40,M-44:DRAWTO N+22,M-43
:DRAWTO N+41,M-43:DRAWTO N+21,M-42:DRA
WTO N+42,M-42:DRAWTO N+20,M-41
2240 DRAWTO N+43,M-41
2250 DRAWTO N+19,M-40:DRAWTO N+43,M-40
:RETURN
2260 REM *****************************
2270 COLOR 2:PLOT N+18,M-39:DRAWTO N+4
4,M-39:DRAWTO N+17,M-38:DRAWTO N+44,M-
38:DRAWTO N+17,M-37:DRAWTO N+45,M-37
2280 DRAWTO N+16,M-36
2290 DRAWTO N+45,M-36:DRAWTO N+16,M-35
:DRAWTO N+46,M-35:DRAWTO N+15,M-34:DRA
WTO N+46,M-34:DRAWTO N+14,M-33
2300 DRAWTO N+47,M-33:RETURN
2310 REM *****************************
2320 COLOR 2:PLOT N+13,M-32:DRAWTO N+4
7,M-32:DRAWTO N+11,M-31:DRAWTO N+47,M-
31:DRAWTO N+10,M-30:DRAWTO N+48,M-30
2330 PLOT N+8,M-29:DRAWTO N+34,M-29:DR
AWTO N+7,M-28:DRAWTO N+33,M-28:DRAWTO
N+7,M-27:DRAWTO N+32,M-27
2340 PLOT N+8,M-26:DRAWTO N+29,M-26
2350 PLOT N+36,M-29:DRAWTO N+48,M-29:D
RAWTO N+35,M-28:DRAWTO N+49,M-28:DRAWT
O N+34,M-27:DRAWTO N+49,M-27
2360 DRAWTO N+34,M-26:DRAWTO N+49,M-26
:RETURN
2370 REM *****************************
2380 COLOR 2:PLOT N+9,M-25:DRAWTO N+24
,M-25:PLOT N+9,M-24:DRAWTO N+18,M-24:P
LOT N+9,M-23:DRAWTO N+16,M-23
2390 PLOT N+10,M-22:DRAWTO N+14,M-22:P
LOT N+12,M-21
2400 COLOR 3:PLOT N+11,M-22:DRAWTO N+1
5,M-26:COLOR 2:REM ********** MOUTH **
*****
2410 PLOT N+33,M-25:DRAWTO N+49,M-25:D
RAWTO N+31,M-24:DRAWTO N+49,M-24:DRAWT
O N+29,M-23:DRAWTO N+49,M-23
2420 DRAWTO N+27,M-22:DRAWTO N+48,M-22
:DRAWTO N+25,M-21:DRAWTO N+48,M-21:DRA
WTO N+23,M-20:DRAWTO N+47,M-20
2430 DRAWTO N+22,M-19:DRAWTO N+47,M-19
:RETURN
2440 REM *****************************
2450 COLOR 2:PLOT N+21,M-18:DRAWTO N+4
7,M-18:DRAWTO N+20,M-17:DRAWTO N+46,M-
17:DRAWTO N+19,M-16:DRAWTO N+46,M-16
2460 DRAWTO N+18,M-15:DRAWTO N+45,M-15
:DRAWTO N+18,M-14:DRAWTO N+45,M-14:DRA
WTO N+17,M-13:DRAWTO N+44,M-13
2470 DRAWTO N+17,M-12:DRAWTO N+44,M-12
:RETURN
2480 REM *****************************
2490 COLOR 2:PLOT N+17,M-11:DRAWTO N+4
3,M-11:DRAWTO N+17,M-10:DRAWTO N+43,M-
10:DRAWTO N+16,M-9:DRAWTO N+42,M-9
2500 DRAWTO N+16,M-8
2510 DRAWTO N+42,M-8:PLOT N+15,M-6:DRA
WTO N+42,M-6:DRAWTO N+14,M-5:DRAWTO N+
43,M-5:RETURN
2520 REM *****************************
2530 COLOR 2:PLOT N+15,M-4:DRAWTO N+42
,M-4:DRAWTO N+14,M-3:DRAWTO N+43,M-3:D
RAWTO N+13,M-2:DRAWTO N+45,M-2
2540 DRAWTO N+11,M-1:DRAWTO N+46,M-1:D
RAWTO N+12,M:DRAWTO N+45,M
2550 COLOR 3:PLOT N+29,M-42:DRAWTO N+2
4,M-42:DRAWTO N+22,M-39:PLOT N+23,M-41
:PLOT N+27,M-41:DRAWTO N+25,M-39
2560 PLOT N+24,M-39:PLOT N+26,M-39:PLO
T N+27,M-40:RETURN
2570 REM ******* PRINTS PRESS FIRE ***
2580 H=75:G=94:GOSUB 1810:G=101:GOSUB
1600:G=109:GOSUB 1630:G=114:GOSUB 1660
:G=121:GOSUB 1660
2590 G=133:GOSUB 1870:G=139:GOSUB 1840
:G=145:GOSUB 1600:G=153:GOSUB 1630
2600 RETURN
2610 REM ***** PRINTS WELL DONE ******
2620 G=95:GOSUB 1900:G=103:GOSUB 1630:
G=109:GOSUB 1930:G=116:GOSUB 1930:G=12
8:GOSUB 1960
2630 G=135:GOSUB 1540:G=142:GOSUB 1990
:G=150:GOSUB 1630
2640 RETURN
2650 REM ******* CLEAN SCREEN *******
2660 FOR I=0 TO 50:NEXT I
2670 COLOR 0:FOR I=0 TO 9:PLOT 89+I,63
+I:DRAWTO 159-I,63+I:DRAWTO 159-I,81-I
:DRAWTO 89+I,81-I:DRAWTO 89+I,63+I:NEX
T I
2680 RETURN
```

Get it right!

LINE	CHSUM	LINE	CHSUM	LINE	CHSUM
100	4273	110	5082	120	5254
130	4273	140	1978	150	1956
160	5932	170	6892	180	2857
190	3430	200	1452	210	6667
220	2495	230	16234	240	12110
250	4433	260	9464	270	5530
280	5464	290	3579	300	5454
310	8032	320	10886	330	11465
340	15228	350	19906	360	8014
370	5692	380	18742	390	17977
400	9550	410	9564	420	9573
430	9675	440	1636	450	1629
460	5382	470	1398	480	5575
490	5178	500	5172	510	5162
520	5372	530	5365	540	5116
550	5164	560	11564	570	5150
580	5136	590	5126	600	5736
610	1498	620	5006	630	16425
640	5400	650	8228	660	5413
670	7882	680	9417	690	9416
700	9408	710	9409	720	9411
730	9410	740	9418	750	9419
760	1498	770	5481	780	9645
790	1589	800	7733	810	1595
820	7721	830	1601	840	7723
850	1607	860	7719	870	1613
880	7717	890	1591	900	7729
910	1600	920	7731	930	5428
940	2847	950	18157	960	17306
970	2560	980	4297	990	1345
1000	15797	1010	24138	1020	19348
1030	19050	1040	20720	1050	18191
1060	19991	1070	19962	1080	11502
1090	17248	1100	17464	1110	14224
1120	5033	1130	5400	1140	3944
1150	1857	1160	5451	1170	14309
1180	2852	1190	4975	1200	5045
1210	5054	1220	5042	1230	5051
1240	5062	1250	5067	1260	16281
1270	1498	1280	5751	1290	6711
1300	12130	1310	7326	1320	7482
1330	7189	1340	6748	1350	5511
1360	9330	1370	7560	1380	7566
1390	7337	1400	9528	1410	4818
1420	1864	1430	6711	1440	7397
1450	6939	1460	4547	1470	6842
1480	6845	1490	1888	1500	4998
1510	16465	1520	1498	1530	4793
1540	23146	1550	1498	1560	4978
1570	9773	1580	1498	1590	4963
1600	21988	1610	1498	1620	4898
1630	14326	1640	1498	1650	4968
1660	15603	1665	11041	1670	1498
1680	4973	1690	9334	1700	1498
1710	4888	1720	20740	1730	1498
1740	4928	1750	14327	1760	1498
1770	4748	1780	7249	1790	1498
1800	4953	1810	17840	1820	1498
1830	4918	1840	4731	1850	1498
1860	4903	1870	11765	1880	1498
1890	4988	1900	20222	1910	1498
1920	4933	1930	7104	1940	1498
1950	4893	1960	17339	1970	1498
1980	4943	1990	10069	2000	1498
2010	4993	2020	8973	2030	1498
2040	4858	2050	9718	2060	1498
2070	4878	2080	12415	2090	1498
2100	5945	2110	4586	2120	9576
2130	12110	2140	1374	2150	1628
2160	5603	2170	19088	2180	5720
2190	10292	2200	4441	2210	19157
2220	2947	2230	18616	2240	2943
2250	7686	2260	4441	2270	20012
2280	2955	2290	18699	2300	4773
2310	4441	2320	19888	2330	17770
2340	5594	2350	18576	2360	7730
2370	4441	2380	18521	2390	8366
2400	13401	2410	18480	2420	18633
2430	7731	2440	4441	2450	19956
2460	18656	2470	7686	2480	4441
2490	19554	2500	2852	2510	16163
2520	4441	2530	18976	2540	11312
2550	19082	2560	9825	2570	6098
2580	15876	2590	11992	2600	1498
2610	5761	2620	15070	2630	9018
2640	1498	2650	5323	2660	3617
2670	20622	2680	1498		

Answers to those Atari queries



AN awful lot of the letters I get regarding the more technical aspects of the Atari could be answered by one book – Mapping the Atari, from Compute! Books.

It is a complete guide to the memory locations used inside the Atari. Everything is there – operating system control bytes, colours, player/missile graphics, sound, input/output, even Basic pointers and variables are covered.

But this book is much more than just a list. Many of the more complex locations have quite lengthy explanatory notes, and there are lots of programs to show you how to use them.

Some locations have as many as three or four pages given over to them, and while such a book can never be a complete tutorial to the workings of a computer, it's about as close as you could possibly get.

Even better, there is now a revised edition, which also covers all of the locations changed for the XL and XE computers (even the aborted 1200XL).

These are listed in the form of a very large appendix, so you can see at a glance which locations refer to which type of computer – and everything is listed in both hex and decimal.

Other appendices cover vertical blank functions, system timers, display lists and player/missile graphics, connection ports (including the parallel bus) and even the workings of DOS 2.5.

There is also an alphabetical index to all of the locations covered, so you can quickly find out what the location mentioned in a particular program or article actually does.

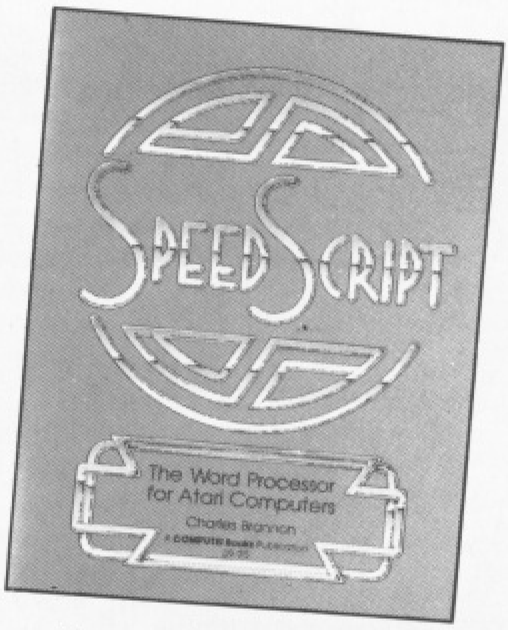
Last, but by no means least, the book finishes with a couple of very useful programs for XL/XE owners. One will convert your "buggy" Revision B Basic fitted in the XL range into the improved Revision C, as provided with the XE, and the others allow you to transfer the operating system from ROM into RAM, so that you can try your hand at modifying things for yourself.

I really cannot recommend this book too highly, so if you feel tempted to write in to us asking "What does location xxx do?" or "How do I use POKE 560?", then you may find that a copy of the XL/XE edition of Mapping The Atari will answer all your questions (and more).

My own copy is never far from reach, and is almost certainly my most-used reference work.

While it may seem a little expensive to some of you at £16.95, I think you'll find it worth every penny. Go out and get one today, and start finding out a little bit more about what's going on right under your nose.

DIY WORD PROCESSOR



I DON'T really know whether to review Speedscript, also from Compute! Books as a book or a piece of software, as it really is both and neither. What you get for your £12.95 is a 114 page book which boils down to the complete listing of a quite reasonable word processor, written completely in machine code.

Two sorts of people will find this book useful – the ones who just want a good, cheap word processor and don't mind a bit of typing – and those who have probably got a word-pro or two already, but are fascinated to know how they work.

The book works on both levels, as it contains an easy-to-type form of the program (in Basic, with extensive checksum error-checking), plus the complete and well-commented assembler listing.

The word processor itself is surprisingly powerful, giving you a whole range of simple but flexible commands. You can set all the usual things such as margins, headers/footers, centring and justifications, page numbers, underline and special printer features, simple macro keys, and more.

You also have search/replace, plus full text movement commands and move/delete by letter, word, sentence or paragraph. The whole thing works in a very attractive re-defined character set using Antic Mode 3 for greater clarity.

An interesting idea then, hampered by the amount of typing involved (about 30 pages of mainly numbers), but of great use to the machine code programmer who wants to pick up some tips.

If you just want a no-hassle word processor you may prefer to lash out a little bit more and get one that doesn't require quite so much work.

André Willey

MicroLink
in association with
TELECOM GOLD
No. 7 March 1986
NEWSLETTER

WORD WINGS DOWN FROM WICK

CAITHNESS Glass, the company that made the Mastermind presentation bowl and many other famous engraved glass trophies, is using MicroLink for a pilot project which may eventually lead to a network linking it with its UK sales reps, agents and concession shops.

Famous all over the world for its collectors' paperweights and glass-and-silver jewellery, the firm has a greater need than most for reliable, high speed communications.

Situated in Wick, just about as far north as you can get in mainland Scotland, the company has factories in Perth and Oban, its sales office in Stoke-on-Trent, and reps, agents and retail outlets all over the UK.

"Considering the shortcomings of the postal system it would be ideal for everyone to have their own mailbox on a closed MicroLink network to facilitate ordering, financial accounting and stock control", said accounts and systems manager Homer Lindsay.

"It might even be possible to open up a section for micro owners among the 11,000 people around the world who are registered collectors of our paperweights so they can go on-line for the latest news about our products".

The password is...

WHEN someone joins MicroLink they are issued with their personal mailbox number and a unique password.

This is usually a six letter word – six is the minimum number of letters the system will accept – and the subscriber is, of course, free to change the password as often as required.

Human nature being what it is, do subscribers often lose or forget their passwords?

Says system manager Colin Rogerson: "Not very often now that MicroLink is well established. But in the early days we averaged one such case a week.

"However the problem is easily overcome. After taking the most stringent steps to establish the subscriber's credentials we refer them to the original password they were allocated, which is kept on permanent file at MicroLink's head office, and reissue it to their mailbox.

"But it does point up the fact that subscribers should always be careful to keep a record of whatever password they are using at the moment – although not in too obvious a place – just in case they suffer a lapse of memory".

Hold that train...

THE train now standing at Platform 4 can be caught courtesy of MicroLink, making subscribers rail journeys simple to organise from home or office.

If they hold a Visa, Access, American Express or Travel Key credit card they can book British Rail tickets, seat and sleeper reservations using MicroLink's new telebooking service.

Seats can be reserved at an extra cost of £1 – or £2 on Pullman services – and the charge for sleeper accommodation is £15 a berth.

MicroLink even helps subscribers choose their trains by carrying constantly updated British Rail timetables, together with fares between London and 20 major cities throughout England, Scotland and Wales.

Log on to the Flying Pig

LONDON subscriber Adrian Mars is using MicroLink to operate what he claims is the world's cheapest, completely independent, professional computer consultancy service ever.

He's even calling his organisation Flying Pig Services as an indication that be believes just about anything is possible with the help of MicroLink.

Flying Pig will help both home and business micro users choose their hardware, peripherals and software and also solve technical problems.

For £5.40 clients receive via MicroLink one or more versions of a comprehensive questionnaire relating to their specific area of interest.

The completed form will be assessed by Flying Pig consultants who, says Mars, will promptly offer "an unbiased reply that could well save lots of money". The client is also entitled to 15 minutes consultancy over the phone.

LINK OVERCOMES HANDICAPS

MICROLINK has been chosen as the electronic medium for an innovative scheme to introduce disabled people to the world of telecomputing.

Over the next few months the Central Remedial Clinic in Dublin will operate a pilot project involving half a dozen or so people of normal intelligence but who have physical handicaps ranging from slight motor impairment to the inability to move or speak coherently.

The project is thought to be unique in that, as well as using MicroLink's electronic mail facility, it will also embrace speech synthesis and speech recognition technology in helping the disabled to communicate with the outside world.

Microelectronic resources manager Bob Allen said: "We hope that their increased ability to communicate will lead to fuller lives. I won't guarantee them a job, but at least it will give them a fighting chance in the marketplace".

Interestingly, the disabled people involved in the project aren't thrilled at the prospect of telecomputing from home.

"At first we took the traditional view that this would mean independence for them", said Allen, "but they told us it would remove the social dimension from their lives and tend to isolate them.

"So we have compromised and will arrange for them to attend centres where there is a human element combined with the working environment".

YOUR chance to join MicroLink – Page 67

NEW SERIES

BASIC COMPILER

Speed up your programs – even on a 16k Atari – with this Basic Compiler by FRANK O'DWYER

HAVE you ever wished your Atari ran faster? Perhaps you have written a program which redefines the character set or a vertical move routine for player missile graphics. Programs like these really show up the Atari's lack of speed when written in Basic.

An obvious solution is to write the routines in machine language using Atari Basic's USR function facility. One way to do this is to use an assembler program such as Atari's Assembler Editor cartridge.

This program performs a lot of the donkey work associated with machine language programming, but it requires that the programmer not only be thoroughly familiar with the 6502 CPU at the heart of every 8-bit Atari but also with the machine itself and with its operating system.

This is especially true where colour graphics and sound are concerned.

An alternative solution is to use a program called a compiler, which is capable of taking a program written in Basic – or Pascal, C, or what have you – and directly producing either machine language or assembly language.

In the latter case the assembly language is assembled using an assembler program as discussed above to produce executable machine code. The trouble with compilers is that they tend to be expensive, and they usually require a disc drive and more than 16k of memory, thus leaving 400 and 600XL owners out in the cold.

The program presented in this series is an exception to all the above. It is a compiler written in Basic which compiles a language similar to Atari Basic into assembly language which can then be assembled to produce a ready-to-go USR function using the Atari Assembler Editor cartridge or an equivalent assembler.

All of this can be accomplished using just a 16k Atari with cassette drive. If you have more memory or a disc drive your life will be made simpler, but it's by no means essential.

Before you get too excited I should point out that this is not a professional software development system – you can't produce large programs with it.

It is primarily intended for "fast and dirty" routines which can be captured in about a screen's worth of Basic. Also the limitations of producing the compiler in 16k have meant that many Atari Basic features are not supported.

Floating point, strings and arrays, for example, may not be used – these are the main restrictions.

You also lose the comprehensive error checking offered by the Atari – there are few error checks when compiling, and fewer still when running your USR function.

This limitation is easily overcome by testing your routine thoroughly using Atari Basic and only then, when you are certain that it is correct, compiling it to get the benefit of machine code speed.

Initially you will find that many things cannot be done using the compiler. But you will also find things that cannot be done without the compiler.

Take sound, for example. The compiler provides an exact replica of the Atari SOUND statement, but without range checking on the four sound parameters. Remembering that compiled programs execute many times faster than normal Basic, it's possible to get new sounds from the Atari by varying the sound parameters much more quickly than is normally possible.

Other benefits of the compiler are advanced control structures such as named procedures and REPEAT ... UNTIL, and keywords to deal with timed interrupts. These are extremely powerful and open the door to concurrent programming – that is, two programs appearing to run at the same time.

Over the coming months I shall be presenting the compiler itself and also discussing the Basic which it compiles – its special features and limitations. I shall also be giving example programs which demonstrate the compiler's usefulness.

For now, type in Program I – listing starts on Page 33 – and save it several times on a cassette or disc all by itself. This is the compiler program.

To use it you will need the compiler library, a set of assembly language routines which the eventual USR function will require.

● *I shall present this next month, and also explain how to use the compiler.*

```
100 I=1:C=2:F=4:FF=5:TT=3:SS=6:SV=7:NX
T=1110:EXPR=530:LINE=390:ARGS=410:ASGN
=2740:TST=950:TSTS=940:V=910:GOTO 980
110 REM GETCH
120 P=P+I:IF P>LEN(P$) THEN RETURN
130 IF P$(P,P)=CHR$(34) THEN STR=I-STR
140 IF P$(P,P)=" " THEN IF STR=Z THEN
120
150 RETURN
160 REM GETSTAT
170 BRACK=Z:QUOT=Z:STAT$="":S=I:IF EOL
 THEN GOSUB 260
180 GOSUB 120:IF P>LEN(P$) THEN RETURN

190 EOL=Z:IF P$(P,P)=EOL$ THEN EOL=I
200 IF (BRACK=Z AND QUOT=Z AND P$(P,P)
=":") OR P$(P,P)=EOL$ THEN RETURN
210 IF P+TT<=LEN(P$) THEN IF BRACK=Z T
HEN IF QUOT=Z THEN IF P$(P,P+TT)="THEN
" THEN P=P+F-I:RETURN
220 IF EN=Z THEN IF P+F<=LEN(P$) THEN
IF QUOT=Z THEN IF BRACK=Z THEN IF P$(P
,P+F)="ENDIF" THEN P=P-I:EN=I:RETURN
230 IF EN THEN IF QUOT=Z THEN IF BRACK
=Z THEN IF P+F<=LEN(P$) THEN IF P$(P,P
+F)="ENDIF" THEN STAT$="ENDIF":EN=Z:P=
P+F:RETURN
240 STAT$(LEN(STAT$)+I)=P$(P,P):IF BRA
CK=Z THEN IF P$(P,P)=CHR$(34) THEN QUO
T=I-QUOT
241 IF QUOT THEN 180
242 IF P$(P,P)="[" THEN BRACK=BRACK+I
243 IF P$(P,P)="]" THEN BRACK=BRACK-I
245 GOTO 180
250 REM GETNUMBER
260 NUM=Z
270 GOSUB 120:IF P>LEN(P$) THEN RETURN

280 IF P$(P,P)>="0" AND P$(P,P)<="9" T
HEN NUM=NUM*10+ASC(P$(P))-ASC("0"):GOT
O 270
290 P=P-I:? NUM:GOSUB LINE:? #C;"L";NU
M:RETURN
300 REM GET LINE
310 STAT$=""
320 P=P+I:IF P>LEN(P$) THEN 350
330 IF P$(P,P)=EOL$ THEN 350
340 STAT$(LEN(STAT$)+I)=P$(P,P):GOTO 3
20
350 IF STAT$="" THEN RETURN
360 IF STAT$(I,I)>="0" AND STAT$(I,I)<
="9" THEN STAT$=STAT$(C):GOTO 350
370 RETURN
380 REM PUTNUMBER
390 ? #C;L;" ";:L=L+I:CNT=CNT+I:RETURN

400 REM GETARGS
410 TERM$=",":IF ARGC=I THEN TERM$=EOL
$
420 GOSUB EXPR:IF ARGC>I THEN GOSUB LI
NE:? #C;" LDX #";(ARGC-C)*C:GOSUB LINE
:? #C;" JSR ARG"
430 ARGC=ARGC-I:IF ARGC THEN S=S+I:GOT
O ARGS
440 RETURN
450 GOSUB 480:IF TERM THEN RETURN
460 IF STAT$(S,S)<>"@" AND STAT$(S,S)<
>"#" THEN RETURN
470 GOSUB LINE:? #C;" JSR A";ASC(STAT$
(S)):S=S+I:GOTO 450
471 FOR VAR=1 TO 26:V$(VAR,VAR)="0":NE
XT VAR:RETURN
472 VV=1:IF DIR=-1 THEN VV=26
473 IF V$(VV,VV)="1" THEN GOSUB LINE:?
 #C;" LDX #";(VV-I)*F:GOSUB LINE:? #C;
" JSR ";CMM$
474 VV=VV+DIR:IF VV=0 OR VV=27 THEN RE
TURN
475 GOTO 473
480 IF S>LEN(STAT$) THEN TERM=I:RETURN

490 TERM=STAT$(S,S)=TERM$:RETURN
500 REM ASSIGNVAR
510 GOSUB LINE:? #C;" LDX #";VAR*F:GOS
UB LINE:? #C;" JSR ASN":RETURN
520 REM COMPILE EXPRESSION
530 GOSUB TSTS:OP=I:GOSUB 660:OP=C:GOS
UB 480:IF TERM THEN RETURN
540 GOSUB 450:IF TERM THEN RETURN
550 OPER=S:IF S+I<=LEN(STAT$) THEN S=S
+(STAT$(S,S+I)=">=" OR STAT$(S,S+I)="<
=" OR STAT$(S,S+I)="<>")
560 S=S+I:GOSUB 660
570 REM OPERATION
580 IF STAT$(OPER,OPER)=TERM$ THEN RET
URN
590 IF STAT$(OPER,OPER+I)=">=" THEN GO
SUB LINE:? #C;" JSR GE":GOTO 630
600 IF STAT$(OPER,OPER+I)="<>" THEN GO
SUB LINE:? #C;" JSR NE":GOTO 630
605 QQ=OPER:GOSUB 880:IF Q=Z THEN S=LE
N(STAT$)+I:GOSUB TSTS
610 IF STAT$(OPER,OPER+I)="<=" THEN GO
SUB LINE:? #C;" JSR LE":GOTO 630
620 GOSUB LINE:? #C;" JSR A";ASC(STAT$
(OPER))
630 GOSUB 450:IF TERM=Z THEN 550
640 RETURN
650 REM OPERAND
660 IF STAT$(S,S)<>CHR$(34) THEN 663
661 GOSUB LINE:? #C;" JMP J";J:GOSUB L
INE:? #C;"Y";J;" .BYTE ";STAT$(S):GOSU
B LINE:? #C;"J";J:STAT$(S)="[Y"
662 STAT$(LEN(STAT$)+I)=STR$(J):STAT$(
LEN(STAT$)+I)="]":J=J+I:GOTO 670
663 IF STAT$(S,S)="'" THEN X=S-I:S=S+I
:GOSUB TSTS:S=S+I:GOSUB 730:GOTO 480
670 TERM=Z
680 X=S:IF STAT$(S,S)<>"[" THEN 760
690 REM ASSEMBLER CONSTANT
700 S=S+I:GOSUB TSTS
710 IF STAT$(S,S)<>"]" THEN 700
720 IF S=X+I THEN T=LEN(STAT$)+I:GOSUB
 TST
721 GOSUB 730:S=S+I:GOTO 480
730 GOSUB LINE:? #C;" LDA #";STAT$(X+I
,S-I);"&$FF"
740 GOSUB LINE:? #C;" LDX #";STAT$(X+I
,S-I);"/256":IF OP=I THEN GOSUB LINE:?
 #C;" JSR LD1"
750 RETURN
760 IF STAT$(S.S)<"A" OR STAT$(S.S)>"Z
" THEN 830
770 REM VARIABLE
780 T=S:GOSUB V:GOSUB LINE:? #C;" LDX
#";VAR*F
790 GOSUB LINE:IF OP=I THEN ? #C;" JSR
 LDI"
800 IF OP=C THEN ? #C;" JSR LDV"
810 S=S+I:GOTO 480
820 REM NUMBER
830 QQ=S:GOSUB 480:IF TERM=Z THEN GOSU
B 880
840 IF Q=Z AND TERM=Z THEN S=S+I:GOTO
830
850 GOSUB LINE:? #C;" LDA #";STAT$(X,S
-I);"&$FF"
860 GOSUB LINE:? #C;" LDX #";STAT$(X,S
-I);"/256":IF OP=I THEN GOSUB LINE:? #
C;" JSR LD1"
870 RETURN
880 T$=STAT$(QQ):Q=T$="|" OR T$="&" OR
 T$="^" OR T$="+" OR T$="-" OR T$=">"
OR T$="<" OR T$="=" OR T$="/"
890 Q=Q OR T$="?" OR T$="*" OR T$="#"
OR T$="@":RETURN
900 REM ENCODE VARIABLE A-Z
910 VAR=ASC(STAT$(T))-ASC("A"):IF VAR<
0 OR VAR>25 THEN ? "ILLEGAL VARIABLE A
T LINE ";NUM:ER=ER+I:POP :POP :GOTO NX
T
920 RETURN
930 REM TEST FOR END OF STATEMENT
940 T=S
950 IF T>LEN(STAT$) THEN ? BEL$;" -SYN
TAX ERROR AT LINE ";NUM:ER=ER+I:POP :P
OP :GOTO NXT
960 RETURN
970 REM MAINLINE
980 EOL=I:MAX=5:DIM IS(MAX),FS(MAX),US
(MAX)
990 DIM BEL$(I),EOL$(I),TERM$(I),STAT$
(128),T$(I),L$(FF),V$(26),CMM$(F),P$(F
RE(Z)-50):GRAPHICS Z:EOL$=CHR$(155):BE
L$=CHR$(253)
1000 POKE 82,Z:? :? "    ** 'TINY' BAS
IC COMPILER **":? "        by F.M. O'Dw
yer 1984":? :? :GOSUB 471
1010 TRAP 1010:? "Filename for source
program"
1020 INPUT STAT$:CLOSE #I:OPEN #I,F,Z,
STAT$:TRAP 1050:P$="":? :? "Opening so
urce file.":? :EE=STAT$(I,I)="E"
1030 INPUT #1;STAT$:IF  NOT EE THEN PR
INT STAT$
1040 P$(LEN(P$)+I)=STAT$:P$(LEN(P$)+I)
=EOL$:GOTO 1030
1050 CLOSE #I:IF PEEK(195)<>136 AND PE
EK(195)<>5 THEN ? BEL$;"ERROR";PEEK(19
5);" ON LOAD":? :GOTO 1010
1060 IF PEEK(195)=5 THEN ? BEL$;"ERROR
- OUT OF MEMORY":? :GOTO 1010
1070 TRAP 1070:? :? "Start address for
 assembly language":INPUT L$:IF L$=""
THEN 1070
1080 P=Z:TRAP 1080:? :? "Start line nu
mber for assembly language":INPUT L:IF
 L<1000 THEN 1080
```

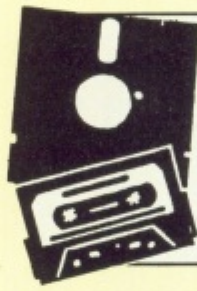
```
1090 TRAP 1090:? :? "Filename for assembly language":INPUT STAT$:CLOSE #C:OPEN #C,8,Z,STAT$:? #C;"1  *=";L$
1100 TRAP 40000:? :? "Compiling.":? :GOSUB LINE:? #C;" JSR INIT"
1110 GOSUB 170:IF P>=LEN(P$) AND STAT$="" THEN GOSUB LINE:? #C;" JMP BASIC":GOTO 2770
1120 IF STAT$="" THEN GOTO NXT
1130 IF STAT$="REM" THEN GOTO NXT
1140 IF LEN(STAT$)=I THEN T=2:GOSUB TST
1150 REM IF STATEMENT
1160 IF STAT$(S,S+I)<>"IF" THEN 1200
1170 IF SP>MAX THEN ? BEL$;"IFS NESTED TOO DEEPLY AT LINE ";NUM:ER=ER+I:GOTO NXT
1180 IS=IS+I:IS(SP)=IS:SP=SP+I:S=S+C:GOSUB EXPR:GOSUB LINE:? #C;" JSR IF"
1190 GOSUB LINE:? #C;" BNE J";J:GOSUB LINE:? #C;" JMP F";IS:GOSUB LINE:? #C;"J";J:J=J+I:GOTO NXT
1200 IF S+TT>LEN(STAT$) THEN GOTO 1710
1210 REM GOTO STATEMENT
1220 IF STAT$(S,S+TT)<>"GOTO" THEN 1252
1230 GOSUB LINE:? #C;" JMP L";
1240 T=S+F:GOSUB TST
1250 ? #C;STAT$(S+F):GOTO NXT
1251 REM TRAP STATEMENT
1252 IF STAT$(S,S+TT)<>"TRAP" THEN 1270
1253 S=S+F:GOSUB TSTS:IF STAT$(S)="OFF" THEN GOSUB LINE:? #C;" STY TRF":GOTO NXT
1254 GOSUB LINE:? #C;" LDA #1":GOSUB LINE:? #C;" STA TRF":IF STAT$(S)="ON" THEN GOTO NXT
1255 GOSUB LINE:? #C;" LDA #L";STAT$(S);"&$FF":GOSUB LINE:? #C;" STA TRAP":GOSUB LINE:? #C;" LDA #L";STAT$(S);"/256"
1256 GOSUB LINE:? #C;" STA TRAP+1":GOTO NXT
1260 REM POKE STATEMENT
1270 IF STAT$(S,S+TT)<>"POKE" THEN 1300
1280 S=S+F:ARGC=C:GOSUB ARGS:GOSUB LINE:? #C;" JSR POKE":GOTO NXT
1290 REM DOKE STATEMENT
1300 IF STAT$(S,S+TT)<>"DOKE" THEN 1312
1310 S=S+F:ARGC=C:GOSUB ARGS:GOSUB LINE:? #C;" JSR DOKE":GOTO NXT
1311 REM GET# STATEMENT
1312 IF STAT$(S,S+TT)<>"GET#" THEN 1315
1313 S=S+F:ARGC=I:TERM$=",":GOSUB 420:GOSUB LINE:? #C;" JSR GETC":T=S+I:GOSUB V:GOSUB 510:GOTO NXT
1314 REM PUT# STATEMENT
1315 IF STAT$(S,S+TT)<>"PUT#" THEN 1330
1316 S=S+F:ARGC=C:GOSUB ARGS:GOSUB LINE:? #C;" JSR PUTC":GOTO NXT
1320 REM DATA  STATEMENT
1330 IF STAT$(S,S+TT)<>"DATA" THEN 1370
1340 T=S+F:GOSUB TST:IF FDAT=0 THEN GOSUB LINE:? #C;"LDATA":FDAT=1
1350 GOSUB LINE:? #C;" .BYTE ";STAT$(S+F):GOTO NXT
1360 REM READ STATEMENT
1370 IF STAT$(S,S+TT)<>"READ" THEN 1452
1380 S=S+F:T=S:GOSUB TST
1390 T=S:GOSUB V
1400 GOSUB LINE:? #C;" LDX #";VAR*F
1410 GOSUB LINE:? #C;" JSR READ"
1420 S=S+I:IF S>LEN(STAT$) THEN GOTO NXT
1430 IF STAT$(S,S)<>"," THEN GOSUB 2860
1440 S=S+I:T=S:GOSUB TST
1450 GOTO 1390
1451 REM PROC STATEMENT
1452 IF STAT$(S,S+TT)<>"PROC" THEN 1470
1453 S=S+F:GOSUB TSTS:GOTO 2080
1460 REM ZERO STATEMENT
1470 IF STAT$(S,S+TT)<>"ZERO" THEN 1510
1480 S=S+F:GOSUB TSTS
1490 T=S:GOSUB V:GOSUB LINE:? #C;" STY V+";VAR*F:GOSUB LINE:? #C;" STY V+";VAR*F+I
1491 S=S+I:IF S>LEN(STAT$) THEN GOTO NXT
1492 IF STAT$(S,S)<>"," THEN S=LEN(STAT$)+I:GOSUB TSTS
1493 S=S+I:GOSUB TSTS:GOTO 1490
1500 REM CODE STATEMENT
1510 IF STAT$(S,S+TT)<>"CODE" THEN 1570
1520 IF LEN(STAT$)<>F THEN GOSUB 2860
1530 GOSUB 310:IF STAT$="" THEN ? BEL$;"NO ENDCODE STATEMENT":ER=ER+I:GOTO NXT
1540 IF STAT$=" ENDCODE" THEN GOTO NXT
1550 ? #C;L;:L=L+I:CNT=CNT+I:? #C;STAT$:GOTO 1530
1560 REM NEXT STATEMENT
1570 IF STAT$(S,S+TT)<>"NEXT" THEN 1670
1580 IF FS=Z THEN ? BEL$;"NO MATCHING FOR AT LINE ";NUM:ER=ER+I:GOTO NXT
1590 IF S+F>LEN(STAT$) THEN GOSUB 2860
1600 T=S+F:GOSUB V
1610 GOSUB LINE:? #C;" LDA V+";VAR*F+TT:GOSUB LINE:? #C;" CMP V+";VAR*F+I:GOSUB LINE:? #C;" BEQ J";J
1620 GOSUB LINE:? #C;" BNE J";J+I:GOSUB LINE:? #C;"J";J;" LDA V+";VAR*F+C
1630 GOSUB LINE:? #C;" CMP V+";VAR*F:GOSUB LINE:? #C;" BEQ J";J+C:GOSUB LINE
1640 ? #C;"J";J+I;" LDX #";VAR*F:GOSUB LINE:? #C;" JSR INC":GOSUB LINE:FS=FS-I:? #C;" JMP N";FS(FS)
1650 GOSUB LINE:? #C;"J";J+C:J=J+TT:GOTO NXT
1660 REM EXIT STATEMENT
1670 IF STAT$<>"EXIT" THEN 1710
1680 GOSUB LINE:? #C;" JSR EXIT":GOSUB LINE
1690 ? #C;" PLA":GOSUB LINE:? #C;" TAY":GOSUB LINE:? #C;" PLA":GOSUB LINE:? #C;" TAX"
1700 GOSUB LINE:? #C;" PLA":GOSUB LINE:? #C;" RTS":GOTO NXT
1710 IF S+C>LEN(STAT$) THEN GOTO ASGN
1720 REM REM  STATEMENT
1730 IF STAT$(S,S+C)<>"REM" THEN 1760
1740 GOTO NXT
1750 REM OPTIONAL LET
1760 IF STAT$(S,S+C)="LET" THEN S=S+TT:GOTO ASGN
1770 REM FOR STATEMENT
1780 IF STAT$(S,S+C)<>"FOR" THEN 1870
1790 IF FS>MAX THEN ? BEL$;"FOR LOOP NESTED TOO DEEPLY AT LINE ";NUM:ER=ER+I:GOTO NXT
1800 T=S+TT:GOSUB TST
1810 S=S+TT:T=S:GOSUB V
1820 S=S+I:T=S+I:GOSUB TST
1830 IF STAT$(S,S+I)<>"TO" THEN GOSUB 2860
1840 S=S+C:VV=VAR:GOSUB EXPR:VAR=VV:GOSUB LINE:? #C;" LDX #";VAR*F:GOSUB LINE:? #C;" JSR LIM"
1850 GOSUB LINE:? #C;"N";FL:FS(FS)=FL:FS=FS+I:FL=FL+I:GOTO NXT
1860 REM GET STATEMENT
1870 IF STAT$(S,S+C)<>"GET" THEN GOTO 1902
1880 GOSUB LINE:? #C;" JSR GET":IF S+TT>LEN(STAT$) THEN GOTO NXT
1890 S=S+TT:T=S:GOSUB V:IF S<>LEN(STAT$) THEN T=LEN(STAT$)+I:GOSUB TST
1900 GOSUB LINE:? #C;" LDY #0":GOSUB LINE:? #C;" STA V+";VAR*F:GOSUB LINE:? #C;" STY V+";VAR*F+I:GOTO NXT
1901 REM XIO STATEMENT
1902 IF STAT$(S,S+C)<>"XIO" THEN 1906
1903 S=S+TT:TERM$=",":ARGC=F:ARGS=420:GOSUB ARGS:GOSUB LINE:? #C;" JSR XIO1":S=S+I:ARGC=I:ARGS=410:GOSUB ARGS
1904 GOSUB LINE:? #C;" JSR XIO2":GOTO NXT
1905 REM VAR STATEMENT
1906 IF STAT$(S,S+C)<>"VAR" THEN 1918
1907 S=S+TT:GOSUB TSTS:GOSUB 471:CMM$="PUSH":DIR=1
1908 GOSUB V:V$(VAR+I,VAR+I)="1"
1909 S=S+I:IF S>LEN(STAT$) THEN 1915
1910 IF STAT$(S,S)<>"," THEN GOSUB 2860
1911 S=S+I:GOSUB TSTS:GOTO 1908
1915 GOSUB 472:GOTO NXT
1918 IF S+C>LEN(STAT$) THEN GOTO ASGN
1919 REM INC STATEMENT
1920 IF STAT$(S,S+C)<>"INC" THEN 1952
1930 S=S+TT:T=S:GOSUB TST
1940 T=S:GOSUB V
1950 GOSUB LINE:? #C;" LDX #";VAR*F:GOSUB LINE:? #C;" JSR INC":GOTO NXT
1951 REM POP STATEMENT
1952 IF STAT$="POP" THEN FOR T=I TO C:
```

```
GOSUB LINE:? #C;" PLA":NEXT T:GOTO NXT
1960 REM DEC STATEMENT
1970 IF STAT$(S,S+C)<>"DEC" THEN 2010
1980 S=S+TT:T=S:GOSUB TST
1990 T=S:GOSUB V
2000 GOSUB LINE:? #C;" LDX #";VAR*F:GO
SUB LINE:? #C;" JSR DEC":GOTO NXT
2010 IF S+F>LEN(STAT$) THEN GOTO ASGN
2020 REM SOUND STATEMENT
2030 IF STAT$(S,S+F)<>"SOUND" THEN 206
0
2040 S=S+FF:ARGC=F:GOSUB ARGS:GOSUB LI
NE:? #C;" JSR SOUND":GOTO NXT
2050 REM GOSUB STATEMENT
2060 IF STAT$(S,S+F)<>"GOSUB" THEN 210
0
2070 S=S+FF:GOSUB TSTS
2080 GOSUB LINE:? #C;" JSR L";STAT$(S)
:GOTO NXT
2090 REM BASIC STATEMENT
2100 IF STAT$(S,S+F)<>"BASIC" THEN 215
0
2110 IF S+F>LEN(STAT$) THEN 2130
2120 S=S+FF:GOSUB EXPR
2130 GOSUB LINE:? #C;" JMP BASIC":GOTO
 NXT
2140 REM ENTER STATEMENT
2150 IF STAT$(S,S+F)<>"ENTER" THEN 220
0
2160 T=S+FF:GOSUB TST
2170 GOSUB LINE:? #C;" LDA #L";STAT$(S
+FF);"&$FF":GOSUB LINE:? #C;" STA 552"
2180 GOSUB LINE:? #C;" LDA #L";STAT$(S
+FF);"/256":GOSUB LINE:? #C;" STA 553"
:GOTO NXT
2190 REM AFTER STATEMENT
2200 IF STAT$(S,S+F)<>"AFTER" THEN 223
2
2210 S=S+FF:GOSUB EXPR
2220 GOSUB LINE:? #C;" LDA R1":GOSUB L
INE:? #C;" STA 538"
2230 GOSUB LINE:? #C;" LDA R1+1":GOSUB
 LINE:? #C;" STA 539":GOTO NXT
2231 REM GOVIA STATEMENT
2232 IF STAT$(S,S+F)<>"GOVIA" THEN 225
0
2233 S=S+FF:GOSUB EXPR:GOSUB LINE:? #C
;" JMP (R1)":GOTO NXT
2240 REM ENTRY STATEMENT
2250 IF STAT$(S,S+F)<>"ENTRY" THEN 231
0
2260 T=S+FF:GOSUB TST
2270 GOSUB LINE:? #C;"L";STAT$(S+FF);"
 PHA"
2280 GOSUB LINE:? #C;" TXA":GOSUB LINE
:? #C;" PHA":GOSUB LINE:? #C;" TYA":GO
SUB LINE:? #C;" PHA"
2290 GOSUB LINE:? #C;" JSR SAVE":GOTO
NXT
2300 REM ENDIF STATEMENT
2310 IF STAT$<>"ENDIF" THEN 2332
2320 IF SP=Z THEN ? BEL$;"NO MATCHING
IF IN LINE ";NUM:ER=ER+I:GOTO NXT
2330 GOSUB LINE:? #C;"F";I$(SP-I):SP=S
P-I:GOTO NXT
2331 REM OPEN# STATEMENT
2332 IF STAT$(S,S+F)<>"OPEN#" THEN 235
0
2333 S=S+FF:ARGC=F:GOSUB ARGS:GOSUB LI
NE:? #C;" JSR OPENC":GOTO NXT
2340 REM LABEL STATEMENT
2350 IF STAT$(S,S+F)<>"LABEL" THEN 239
0
2360 S=S+FF:GOSUB TSTS
2370 GOSUB LINE:? #C;"L";STAT$(S):GOTO
 NXT
2380 REM PRINT STATEMENT
2390 IF STAT$(S,S+F)<>"PRINT" THEN 246
0
2400 IF S+FF>LEN(STAT$) THEN GOSUB LIN
E:? #C;" LDA #155":GOSUB LINE:? #C;" J
SR EOUTCH":GOTO 2440
2410 IF STAT$(S+FF,S+FF)<>CHR$(34) THE
N 2430
2420 GOSUB LINE:? #C;" JSR SPRINT":GOS
UB LINE:? #C;" .BYTE ";STAT$(S+FF):GOS
UB LINE:? #C;" .BYTE 255":GOTO 2440
2430 S=S+FF:GOSUB EXPR:GOSUB LINE:? #C
;" LDA R1":GOSUB LINE:? #C;" JSR EOUTC
H"
2440 GOSUB LINE:? #C;" LDY #0":GOTO NX
T
2450 REM UNTIL STATEMENT
2460 IF STAT$(S,S+F)<>"UNTIL" THEN 250
0
2470 IF US=Z THEN ? BEL$;"NO MATCHING
REPEAT STATEMENT AT LINE ";NUM:ER=ER+I
:GOTO NXT
2480 S=S+FF:GOSUB EXPR:GOSUB LINE:? #C
;" JSR IF":GOSUB LINE:? #C;" BNE U";UN
:UN=UN+I:GOSUB LINE:? #C;" JMP U";US(U
S-I)
2490 US=US-I:GOSUB LINE:? #C;"U";UN-I:
GOTO NXT
```

Get it right!

LINE	CHSUM	LINE	CHSUM	LINE	CHSUM
100	21280	110	3880	120	5759
130	6915	140	6576	150	1498
160	4621	170	10184	180	6807
190	6058	200	12763	210	18079
220	21130	230	22749	240	15115
241	2933	242	6420	243	6434
245	1632	250	6013	260	1146
270	6807	280	13439	290	8363
300	4964	310	1526	320	4696
330	4646	340	6838	350	4706
360	11439	370	1498	380	6054
390	6656	400	4543	410	6926
420	16377	430	8369	440	1498
450	6116	460	8707	470	9740
471	8988	472	4770	473	15030
474	8032	475	1647	480	7198
490	6304	500	5971	510	12014
520	11229	530	12279	540	6104
550	17610	560	2908	570	5949
580	7543	590	11924	600	11922
605	11438	610	11919	620	7558
630	5597	640	1498	650	4488
660	5389	661	18917	662	12276
663	13544	670	1361	680	5738
690	11137	700	3375	710	4532
720	7656	721	4762	730	8073
740	15812	750	1498	760	7972
770	5063	780	8086	790	7540
800	4981	810	2829	820	4089
830	8172	840	7179	850	7902
860	15260	870	1498	880	17069
890	8087	900	11761	910	20985
920	1498	930	15653	940	715
950	16630	960	1498	970	5113
980	7853	990	21130	1000	16658
1010	10119	1020	20503	1030	8054
1040	8324	1050	17104	1060	11265
1070	18141	1080	20180	1090	21305
1100	11628	1110	14883	1120	4914
1130	5741	1140	7041	1150	7495
1160	5387	1170	14901	1180	13506
1190	16902	1200	6146	1210	8860
1220	6308	1230	4536	1240	3208
1250	5028	1251	8826	1252	6272
1253	15070	1254	15511	1255	19799
1256	7447	1260	8802	1270	6223
1280	12095	1290	8790	1300	6225
1310	12059	1311	8664	1312	6114
1313	18425	1314	8705	1315	6138
1316	12162	1320	9793	1330	6222
1340	11875	1350	8526	1360	8750
1370	6204	1380	4353	1390	2357
1400	5364	1410	4989	1420	7099
1430	5994	1440	4356	1450	1893
1451	8812	1452	6264	1453	5155
1460	8853	1470	6284	1480	3372
1490	14722	1491	7099	1492	9504
1493	5175	1500	8768	1510	6223
1520	5929	1530	14340	1540	6690
1550	8322	1560	8879	1570	6337
1580	13008	1590	6211	1600	2717
1610	17873	1620	12383	1630	11303
1640	17587	1650	7840	1660	8863
1670	4776	1680	7315	1690	14656
1700	10679	1710	6161	1720	8642
1730	5558	1740	1930	1750	7454
1760	8244	1770	8100	1780	5521
1790	15865	1800	3285	1810	3795
1820	4320	1830	6677	1840	16853
1850	10950	1860	8087	1870	6480
1880	11818	1890	13027	1900	18675
1901	8097	1902	5604	1903	20740
1904	6856	1905	8088	1906	5600
1907	8724	1908	5342	1909	5882
1910	5994	1911	5207	1915	3880
1918	6161	1919	8056	1920	5508
1930	4286	1940	2357	1950	11988
1951	8104	1952	13703	1960	8033
1970	5456	1980	4286	1990	2357
2000	11954	2010	6167	2020	10071
2030	6320	2040	12295	2050	10071
2060	6248	2070	3490	2080	7928
2090	9995	2100	6197	2110	5114
2120	3409	2130	6911	2140	10086
2150	6258	2160	3243	2170	12534
2180	14484	2190	10066	2200	6252
2210	3409	2220	9171	2230	11771
2231	10027	2232	6237	2233	10772
2240	10173	2250	6332	2260	3243
2270	6870	2280	16721	2290	6841
2300	9994	2310	4818	2320	12643
2330	8870	2331	9856	2332	6142
2333	12265	2340	9983	2350	6259
2360	3490	2370	7085	2380	10118
2390	6360	2400	16780	2410	7063
2420	19395	2430	13990	2440	6650
2450	10088	2460	6335	2470	16060
2480	21577	2490	8039	2500	6334
2510	10236	2520	10911	2540	10081
2550	5068	2560	17155	2570	11362
2571	10104	2572	6399	2573	12779
2580	6399	2590	10622	2600	6711
2610	7759	2620	7933	2630	16022
2640	6408	2641	10574	2642	5598
2643	11805	2644	10561	2645	6666
2646	7234	2647	6408	2650	11162
2660	6829	2670	5391	2680	8021
2690	11210	2700	8094	2710	5256
2720	8069	2730	7089	2740	17472
2750	8651	2760	5130	2770	8585
2780	10308	2790	10843	2800	11991
2810	2925	2820	12625	2830	9689
2840	19140	2850	5866	2860	4869

```
2500 IF S+FF>LEN(STAT$) THEN GOTO ASGN
2510 REM RETURN STATEMENT
2520 IF STAT$="RETURN" THEN GOSUB LINE
:? #C;" RTS":GOTO NXT
2540 REM REPEAT STATEMENT
2550 IF STAT$<>"REPEAT" THEN 2572
2560 IF US>MAX THEN ? BEL$;"REPEAT LOO
PS NESTED TOO DEEPLY AT LINE ";NUM:ER=
ER+I:GOTO NXT
2570 GOSUB LINE:? #C;"U";UN:US(US)=UN:
US=US+I:UN=UN+I:GOTO NXT
2571 REM CLOSE# STATEMENT
2572 IF STAT$(S,S+FF)<>"CLOSE#" THEN 2
580
2573 S=S+SS:ARGC=I:GOSUB ARGS:GOSUB LI
NE:? #C;" JSR CLOSEC":GOTO NXT
2580 IF S+SS>LEN(STAT$) THEN GOTO ASGN
2590 REM RESTORE STATEMENT
2600 IF STAT$(S,S+SS)<>"RESTORE" THEN
2642
2610 IF LEN(STAT$)=SV THEN STAT$(SV+I)
="DATA"
2620 GOSUB LINE:? #C;" LDA #L";STAT$(S
+SV);"&$FF"
2630 GOSUB LINE:? #C;" LDX #L";STAT$(S
+SV);"/256":GOSUB LINE:? #C;" JSR REST
ORE":GOTO NXT
2640 IF S+SV>LEN(STAT$) THEN GOTO ASGN
2641 REM ENDPROC STATEMENT
2642 IF STAT$<>"ENDPROC" THEN 2645
2643 CMM$="PULL":DIR=-1:GOSUB 472:GOSU
B LINE:? #C;" RTS":GOTO NXT
2644 REM DEFPROC STATEMENT
2645 IF STAT$(S,S+SS)<>"DEFPROC" THEN
2647
2646 GOSUB 471:S=S+SV:GOSUB TSTS:GOTO
2370
2647 IF S+SV>LEN(STAT$) THEN GOTO ASGN
2650 REM SETCOLOR STATEMENT
2660 IF STAT$(S,S+SV)<>"SETCOLOR" THEN
 2700
2670 S=S+SV+I:ARGC=TT:GOSUB ARGS
2680 GOSUB LINE:? #C;" JSR SETCOLOR":G
OTO NXT
2690 REM POSITION STATEMENT
2700 IF STAT$(S,S+SV)<>"POSITION" THEN
 GOTO ASGN
2710 S=S+SV+I:ARGC=C:GOSUB ARGS
2720 GOSUB LINE:? #C;" JSR POSITION":G
OTO NXT
2730 REM ASSIGNMENT
2740 T=S:GOSUB V:VV=VAR:S=S+I:GOSUB TS
TS:IF STAT$(S,S)<>"=" THEN S=LEN(STAT$
)+I:GOSUB TSTS
2750 S=S+I:GOSUB EXPR:VAR=VV:GOSUB 510
:GOTO NXT
2760 REM FINISHED
2770 IF SP THEN ? BEL$;"MISSING ENDIF(
S)":ER=ER+I
2780 IF FS THEN ? BEL$;"MISSING NEXT S
TATEMENT(S)":ER=ER+I
2790 IF US THEN ? BEL$;"MISSING UNTIL
STATEMENT(S)":ER=ER+I
2800 ? :? "Compilation complete with "
;ER;" error(s)."
2810 IF ER THEN END
2820 ? :? CNT;" line(s) of code":? :?
"last line numbered ";L-I
2830 ? :? "Use the ASSEMBLER/EDITOR ca
rtridge"
2840 ? "to merge the generated file wi
th":? "the compiler library & assemble
"
2850 ? :? "Bye.":TRAP 40000:END
2860 T=LEN(STAT$)+I:GOTO TST
```



Tired of typing?

Take advantage of our finger-saving offer on Page 52.

So let's get

EVER since we introduced our check-sum program Get It Right! we've had requests to publish check-sums for the earlier games. It seems that some of you are still struggling to debug some of these.

So here, by public demand, are some check-sums for several of the early games. It seems that some people haven't quite grasped what to do with Get It Right! either, so here is a step-by-step guide.

- Type the program into the computer.
- Save it to disc or tape using the LIST command like this:

Disk users	**LIST"D:TEST"**
Tape users	**LIST"C:"**

- Delete the program from memory by typing NEW.
- Now load Get It Right! into the machine, taking note of the instuctions contained in the REM in line 999.
- Disc users should make sure the disc with the listed program is in the drive.
- Tape users should rewind the tape to the beginning of the listed program.
- Type RUN and press Return. Get It Right! will now look at each line of the listed program and put a corresponding check-sum on the screen. Compare each number with the table given in the magazine.

For a short program, the whole table will fit on the screen. However, for a long program, you will have to use Ctrl-1 occasionally to stop the table from scrolling off the screen and to restart it again.

MAZE MUNCH

LINE	CHSUM	LINE	CHSUM	LINE	CHSUM
10	4277	20	5249	30	4304
40	6199	50	6847	100	6167
150	5987	160	4583	200	5425
220	6379	300	4603	310	3963
320	4714	330	3046	350	5230
400	5924	500	836	1000	5366
1060	8143	1061	3248	1062	3479
1065	10177	1070	10460	1080	10974
1100	2321	1200	1498	1500	5728
1550	7969	1560	6375	1580	6432
1590	9212	1600	4861	1610	1498
1620	7968	1630	6415	1640	6462
1650	9271	1660	4875	1670	1498
1700	7779	1710	6455	1720	6492
1730	9327	1740	4889	1800	1498
4000	5527	4010	6967	4020	5153
4030	4004	4032	2277	4034	4740
4036	1345	4040	1104	4050	2089
4055	3595	4060	2277	4070	6482
4075	1013	4080	1347	4082	2584
4084	3305	4086	6391	4088	1347
4090	1345	4100	5582	4200	1946
4210	8303	4300	1498	4500	5644
4505	5978	4510	12596	4520	4489
4530	5003	4540	13747	4550	7479
4560	1701	4565	10262	4570	3612
4600	3499	4610	4438	4620	10269
4630	4206	4640	5558	4650	1345
4800	1498	5000	5280	5005	5978
5008	3877	5010	2323	5015	13176
5020	14855	5025	14893	5030	14728
5035	13258	5040	4321	5050	2283
5060	2125	5070	2302	5080	6751
5090	5088	5110	6761	5120	4155
5150	1345	5160	1347	5200	3576
5210	3792	5220	3640	5230	3432
5240	3640	5250	3792	5260	3640
5270	3730	5280	3640	5290	3792
5300	3640	5310	3432	5320	3640
5340	3792	5350	3576	5400	1498
6000	4525	6010	1398	6020	1661
6030	1388	6040	4001	6050	4027
6060	4053	6070	2620	6080	4279
6100	6722	6120	9888	6150	2596
6200	1498	7000	4516	7010	2813
7020	4274	7030	7119	7040	4018
7050	11745	7060	1345	7200	1498
7500	5889	7510	3880	7520	4405
7600	1498	8000	5054	8040	3491
8050	8403	8070	6360	8080	2737
8100	3841	8110	5532	8120	1498
8200	7574	8220	7501	8240	13831
8500	6207	8510	4003	8515	5536
8520	3600	8530	4524	8540	2269
8550	4742	8560	1345	8565	4518
8570	7718	8575	1946	8580	10003
8585	6219	8590	20639	8600	10650
8610	23973	8620	20895	8630	14566
8640	7186	8700	1946	8800	1498
9000	5512	9005	1855	9006	10360
9010	2322	9020	8706	9025	11519
9040	8760	9080	12863	9090	2311
9094	3721	9096	1345	9100	3772
9110	5697	9120	6142	9130	6265
9140	3858	9200	1498	9300	5439
9310	6017	9800	10156	9810	10740
9820	10666	9830	12034	9840	11230
9850	12220	9860	12028	9870	11566
9880	12286	9890	5180		

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WRAPTRAP

LINE	CHSUM	LINE	CHSUM	LINE	CHSUM
1000	4273	1010	2744	1020	3063
1030	3397	1040	6413	1050	5237
1060	4995	1070	5691	1080	6435
1090	4273	2000	17890	2010	16276
2020	18828	2030	15333	2040	9060
2050	11502	2060	1870	2070	15029
2080	14989	2090	15973	2100	9692
2110	4529	2120	2276	3000	17185
3010	18265	3020	9203	3030	7854
3040	9208	3050	7861	3060	1940
3070	4987	3080	2761	3090	7681
3100	3791	3110	6363	4000	6991
4010	3103	4020	3519	4030	3337
4040	11819	4050	9495	4060	10843
4070	1869	4080	3531	4090	3349
4100	11845	4110	9508	4120	10861
4130	8598	5000	1940	5010	4993
5020	12322	5030	3791	5040	4176
6000	13098	6010	13121	6020	1498
7000	8249	7010	5563	7020	4975
7030	5671	7040	5693	7050	5570
7060	4980	7070	5679	7080	1498
8000	5168	8010	3668	8020	5188
8040	3672	8050	5820	8060	4080
8070	5839	8080	4071	8090	9795
9000	14077	9010	17987	9020	5930
9030	14972	9040	8414	9050	8357
9060	14390	9070	5226	9080	19367
9090	4579	9100	1866	10000	15306
10001	14374	10002	13139	10003	10915
10004	9838	10005	15108	10006	14278
10007	11700				

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CANVAS

LINE	CHSUM	LINE	CHSUM	LINE	CHSUM
10	4841	20	5949	30	1928
35	1889	39	3523	40	7871
45	8280	60	7639	70	9642
80	6781	82	5698	83	5880
85	4509	86	4590	87	5481
88	5526	89	1422	90	4478
95	7216	100	8583	110	5556
115	5453	120	8034	130	8038
140	8044	150	5510	190	1498
199	3529	200	7255	210	4005
220	1498	399	4275	400	6450
410	1506	420	3131	430	4828
440	1503	450	3161	499	4234
500	11904	515	6317	520	4005
999	2500	1000	8873	1010	16805
1015	5394	1017	5701	1020	11466
1030	11485	1040	11513	1050	11528
1070	13669	1072	13468	1075	12521
1077	13429	1080	7210	1082	7215
1084	7243	1086	7248	1095	1877
2000	4779	2010	12039	2020	9967
2030	10264	2040	7524	2050	12954
2060	4620	2070	7628	2080	12129
2090	12043	2100	11577	2110	11777
2120	4868	2130	1498		

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RAIDER 1997

LINE	CHSUM	LINE	CHSUM	LINE	CHSUM
10	3490	20	4937	100	2320
110	9364	120	3843	130	2039
140	1937	500	4010	1000	4617
1010	3882	1020	3374	1030	6338
1100	5153	1110	13034	1120	4205
1130	4244	1140	3935	1150	4014
1160	3873	1170	9467	2000	2973
2010	3244	2020	2694	2030	4676
2040	9936	2100	4587	2110	6942
2999	4020	3000	8074	3010	8099
3020	8059	3030	8128	3050	4100
3060	7197	3070	5287	3080	4108
3090	3883	3100	5673	4000	10433
4010	2566	4020	4003	4030	6925
4040	3143	4050	1833	4100	1853
5000	2315	5010	2101	5020	8860
5030	4473	5040	2540	5050	1363
5060	1498	6000	10357	6010	2878
6020	7600	6030	3176	6100	10214
6110	8220	6120	10170	6130	10691
6140	10060	6150	8750	6160	10594
6170	13463	6180	12981	6190	10891
6210	12298	6220	10191	6230	10084
6240	8531	6400	7762	6410	8358
6500	5761	6600	6054	6800	4001
6810	5765	6820	1859	7000	9081
7010	5335	7020	2119	7030	2148
7040	3825	7050	3135	7100	4656
7110	3613	7120	3913	7130	3839
7140	1498	7200	9123	7210	5638
7220	1498	7300	15175	7310	836
7400	2655	7410	4749	7420	5303
7500	5427	7510	6086	7600	5170
7610	5455	7620	923	7700	8739
9000	7955	9010	5124	9020	6794
9030	6730	9040	5491	9050	6895
9060	5960	9070	5881	9080	4498
9090	5521	9100	1056	9110	5555
9120	4215	9130	6837	9140	4240
9150	1056	9160	3718	9170	5327
9180	5031	9190	4886	9200	1056
9210	5020	9220	4664	9230	4925
9240	3714	9250	5217	9260	1056
9270	5725	9280	4569	9290	4928
9300	6609	9310	4834	9320	4832
9330	3905	9340	5608	9350	3951
9360	4512	9370	8656	9380	4835
9390	5916	9400	4223	9410	6104
9420	6565	9800	15527	9900	16421

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t 'em all right

● Where a number on the screen differs from a number in the magazine this indicates a difference between what you typed and what we printed. In the case of a REM line such a difference probably won't be important. In the case of a DATA statement, a difference could be fatal. A full stop instead of a comma might cause the whole program to crash.

● Use the Return To Basic option in Get It Right! and type NEW. Then re-load the program as follows:

Disc users	**ENTER"D:TEST"**
Tape users	**ENTER"C:"**

Correct the offending lines and save the program again (see second step above). If you've made the corrections successfully, you should be able to RUN the program now.

However, if it still won't run you'll have to go back to step three.

It's also worth pointing out that although the micro might say something like ERROR 8 IN LINE 30, this doesn't necessarily mean that there is a mistake in line 30 itself. This is just the line that was being executed when the error condition arose.

Typically the line referred to in the error message contains a READ statement. In these cases the typing error has probably been made somewhere in the DATA that is being read by the mentioned line.

Finally, if you're new to Get It Right! and have entered it from the December issue, make sure you see the correction which we published in the January issue. "To err is human – it takes a computer to really screw things up!"

GUY FAWKES

LINE	CHSUM	LINE	CHSUM	LINE	CHSUM
10	3652	20	4908	30	3991
33	6629	35	5693	37	4100
40	6199	50	6847	100	3360
150	4737	160	4583	200	3918
300	3682	310	5349	320	4714
330	3046	350	4769	400	5924
500	836	1000	5366	1010	10184
1015	6723	1020	10833	1060	12996
1061	4499	1065	7543	1070	9368
1090	12671	1500	5626	1505	8490
1515	6989	1530	9508	1540	7215
1560	7947	1580	7983	1610	11541
1700	3978	4500	4784	4505	5978
4530	6965	4600	8618	4610	4845
4620	2845	4640	10467	4650	1946
4700	19402	4710	14980	4720	14512
4800	1498	5000	4544	5005	5978
5010	5641	5020	11651	5040	6027
5045	4944	5050	2274	5060	1297
5070	2302	5075	1730	5080	3953
5090	3957	5100	6069	5110	5533
5120	1007	5150	1345	5160	1347
5161	1498	5163	3948	5164	4803
5165	4128	5166	4128	5170	4116
5180	4782	5190	3972	5200	3972
5210	3944	5220	4752	5230	3972
5240	3972	5250	3936	5260	4782
5270	3972	5280	3972	5290	3880
5300	4756	5310	3946	5320	3946
5340	3734	5350	4686	6000	4525
6010	4719	6020	3856	6025	942
6030	3778	6035	3709	6040	4143
6045	1345	6050	659	6100	18869
6150	1493	6200	1498	7000	4516
7010	5912	7030	7119	7040	4018
7050	11745	7060	1345	7200	1498
8000	5054	8040	3491	8050	8403
8070	6360	8080	2737	8100	3841
8110	5532	8120	1498	8200	14732
8220	7873	8240	15933	8250	2207
8500	6207	8510	4003	8515	8420
8520	5754	8565	4518	8570	7718
8575	1946	8580	10003	8585	6204
8590	20132	8600	18832	8610	26560
8620	19105	8640	7186	8700	1946
8800	1498	9000	5512	9005	1855
9010	2322	9020	7317	9040	8760
9080	12863	9085	6956	9090	11298
9095	2854	9194	7123	9200	1498
9500	4658	9505	3124	9510	5393
9520	4856	9530	3124	9540	5001
9550	4859				

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PONTOON

LINE	CHSUM	LINE	CHSUM	LINE	CHSUM
5	2916	6	2302	7	3460
8	3222	10	18819	20	13285
30	18047	40	4007	50	16631
60	12272	70	20450	80	17752
90	20938	95	16022	100	15343
105	12379	110	14165	120	8537
130	21987	140	18294	150	25060
160	14529	170	14427	180	18443
190	19392	191	2594	192	2599
193	2604	194	2609	195	2614
200	15567	210	8647	260	16117
270	14142	280	4467	290	4439
300	4456	310	4482	320	19540
330	10716	340	9825	350	19180
360	15115	370	15255	380	8153
390	20730	400	2139	405	19371
410	20416	419	7941	420	12288
430	13369	440	12379	450	14060
460	9254	470	12950	480	11040
490	14090	499	4545	500	17105
510	16135	520	16440	540	15744
550	17997	555	15825	556	8775
560	11957	570	15290	580	7876
590	11523	600	8773	610	8773
620	10682	630	9322	640	1622
650	14368	660	11089	670	1335
680	5202	690	997	700	19959
710	14670	720	7384	730	4020
740	1498	800	17937	810	19420
820	5153	830	3972	840	11707
850	12097	860	4011	870	1634
880	15744	890	20233	891	1646
895	5376	900	19897	905	5023
910	8319	999	836	1000	5680
1005	3117	1010	19990	1015	4227
1018	2895	1020	12970	1030	19326
1040	18746	1050	9738	1100	10656
1110	17711	1120	14285	1130	1851
1140	13008	1150	7525	1160	2406
1170	17624	1180	8766	2000	15333
2010	9831	2020	9831	2030	7734
3000	10081	3005	3117	3010	20331
3020	8895	3025	14376	3030	21735
3040	9944	3100	4812	3110	9622
3120	2367	5000	12387	5001	5743
5005	17710	5006	14367	5010	17746
5015	3968	5020	16872	5500	13934
5510	11919	5520	13233	5530	13549
5540	12795	5550	14088	5560	14079
5570	13987	5580	6469		

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LINE	CHSUM	LINE	CHSUM	LINE	CHSUM
10	4651	20	16483	30	17251
40	4651	50	4844	60	10666
70	10275	80	17435	90	4003
100	1912	110	1924	120	3901
130	1432	140	15905	150	2890
160	4761	170	1610	180	2900
190	4902	200	4244	210	13425
220	4780	230	10192	240	4782
250	10074	260	1498	270	16502
280	6528	290	3671	300	6628
310	3200	320	3029	330	2272
340	4123	350	4975	360	4981
370	1909	380	3507	390	1498
400	17076	410	2121	420	17539
430	8180	440	13836	450	47404
460	4628	470	9150	480	5516
490	2281	500	11347	510	20176
520	4418	530	2600	540	8465
550	9145	560	4718	570	4723
580	4800	590	5361	600	1616
610	4722	620	5695	630	1909
640	1924	650	2306	660	3575
670	17212	680	1933	690	19630
700	19632	710	20129	720	16704
730	15634	740	15647	750	11132
760	5838	770	9083	780	18222
790	1937	800	1498	810	8651
820	14707	830	12474	840	19383
850	1937	860	13893	870	4419
880	6741	890	3097	900	1498
910	10691	920	5924	930	18124
940	9397	950	8164	960	3398
970	8466	980	8460	990	8319
1000	17364	1010	4551	1020	6149
1030	1913	1040	5859	1050	12547
1060	4533	1070	14593	1080	16691
1090	3501	1100	48663	1110	4078
1120	11527	1130	4418	1140	4413
1150	8876	1160	8553	1170	8572
1180	2984	1190	5913	1200	15353
1210	3807	1220	5933	1230	16281
1240	2273	1250	19229	1260	10897
1270	21572	1280	6300	1290	12574
1300	3740	1310	11536	1320	16085
1330	3272	1340	14047	1350	5021
1360	14988	1370	4162	1380	11832
1390	5910	1400	14389	1410	6263
1420	15633	1430	6259	1440	15666
1450	11714	1460	4772	1470	14574
1480	5742	1490	13100	1500	4957
1510	15273	1520	10343	1530	13971
1540	4848	1550	13873	1560	6179
1570	13654	1580	4820	1590	16482
1600	5426	1610	12405	1620	14850
1630	10730	1640	11121	1650	10537
1660	14752	1670	15496	1680	6104
1690	16524	1700	7098	1710	18875
1720	15820	1730	13445	1740	10349
1750	21661	1760	19514	1770	19207
1780	17653	1790	9397	1800	29359
1810	3581	1820	4090	1830	10099
1840	8891	1850	24651	1860	1498
1870	16765	1880	10359	1890	5393
1900	2089	1910	2096	1920	2194
1930	5536	1940	5386	1950	1893
1960	1355	1970	3394	1980	2615
1990	2936	2000	3962	2010	4019
2020	1498	2030	6019	2040	6109
2050	6121	2060	5856	2070	6019
2080	6183	2090	6448	2100	4734
2110	3772	2120	4567	2130	16248
2140	16340	2150	6161	2160	24767
2170	8789	2180	6854	2190	1881
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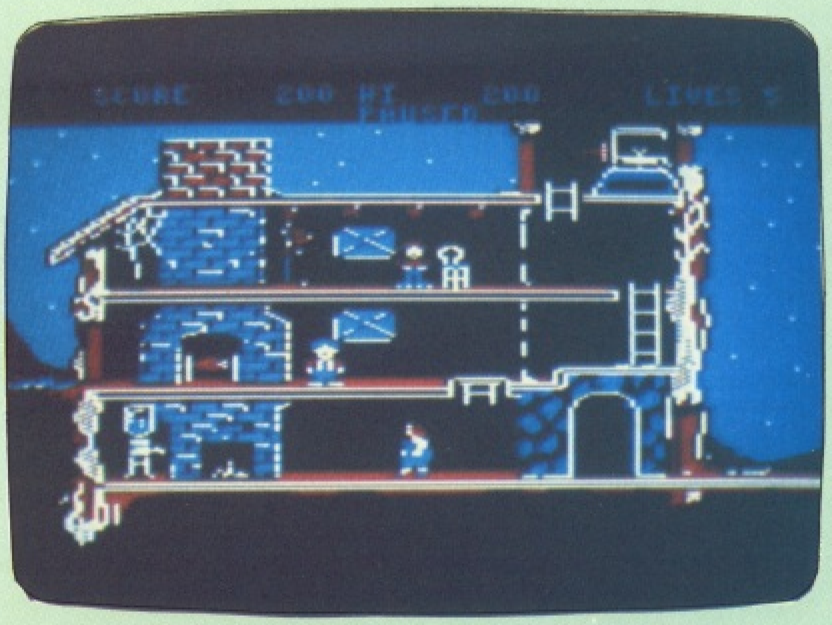
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Goonies saved by the ploy



NOT having seen the movie of the same name, I can't say whether or not **The Goonies** bears any resemblance to it or whether knowledge of the film makes the game any more enjoyable or easier to solve.

I say solve, for what we have here is yet another of those running-jumping-climbing platforms and ladders arcade games where the basic idea is to puzzle your way through several different screens.

Not again, I hear you cry. 'Fraid so, but at least The Goonies has one novel redeeming feature which prevents it from being written off as just another in what has now become a long line of played-out game scenarios.

In order to solve each scene you need to get the two on-screen characters (Goonies) to work as a team. Goonies are children, by the way.

Only one Goonie can be operated at a time – you simply switch control to the other by pressing the joystick fire button.

Unfortunately this unusual and interesting game-play concept is almost wasted here because the other elements in the game – contents, graphics, animation, colour and sound – are nothing to get excited about.

The Goonies' goal is to reach One-Eyed Willy's pirate ship and grab the treasure. To do this, the Goonies have to progress through eight scenes of underground chambers, in each of which puzzles have to be cracked and the exit found before they can progress to the next chamber.

Each scene has to be separately loaded in from cassette or disc when you reach it and you can only ever start at the first scene.

Once you've lost all of your lives, you must reload Scene 1 in again, a real pain if you're using a cassette deck, since this also means rewinding the tape to the correct position.

Various hazards along the way for the Goonies include members of the dreaded Fratelli gang, lava pits, rocks, steam, bats, cannonballs, bullets, flying skulls, slime and a giant octopus. The Goonies move around by running and leaping, climbing and bouncing, the latter on trampolines.

Although the teamwork concept is a good one, the game is sadly let down by rather blocky and uninspiring graphics, while the use of sound and colour is both limited and unexciting.

Included is a hint sheet whose rhyming couplets should help you in solving each of the screens.

The game is worth playing if only to try out the twin character feature, but don't expect anything earth-shaking from it or you'll be disappointed.

Bob Chappell

Forget the cover, enjoy the story

DON'T judge a book by its cover. That's the case with **Zone X** from Gremlin Graphics, and one of their first Atari products.

I was a little apprehensive about the quality of this game, but I soon changed my mind, when it had loaded.

The object is to collect plutonium that has been left scattered around in a mineshaft. Why in an NCB mineshaft?

Well according to the inlay card mankind has produced so much plutonium that all the government storage tanks are full so mineshafts have been used to store nuclear waste.

One of the shafts had been infiltrated by destructive subversives who attempted to seize the plutonium. The whole operation went wrong and plutonium was scattered all over the mine.

The player's job is to collect all the plutonium and dispose of it into containers.

Easy? No way. There are robot guards which walk around in very unlogical directions and laser doors open and close when they want, making your job more difficult.

When you find a piece of plutonium you have to pick it up and then take it to a container. Since this stuff is radioactive, the longer you hold it the weaker your radiation suit becomes.

You can replenish the suit's resistance by picking up time icons which lie around the mine.

If you wish to go through a green door you will need a key, Keys lie about and can be reached with relative ease.

Another helpful object is a mat, which can be used to block off robots. Be careful when using these, because if you place the mat to the wrong side of your man, you will end up stuck in a room with a bunch of robots ready and more than able to kill you.

Once you have safely disposed of all of the plutonium you must leave via the "out" door which you must first locate.

Bonus points are gained by picking up question marks, but stay away from any that are in awkward positions – they ain't worth the bother.

Most players will find Zone 1 hard enough to start with. It will teach you how to avoid robots and time all your moves.

Each zone is different and since the screen scrolls in all directions they take a long time to master.

The game allows selection of Zones 1, 4, 7 and 10. Each then has a difficult level 1, 2 or 3. This gives a possible 30 zones.

Other variables which determine what you will do include doors which close behind you and never open again and air locks which may release robots enclosed in an adjacent room.

There are warp doors, crumbly rocks, and spades in the game, but I failed to find these.

When you are killed, either by being run over by a robot or running out of time, your man will explode and his remains fly off the screen.

The game has a high score table, but I hardly ever scored enough to get on it.

In all a nice offering that should keep the best of gamers occupied for many weeks. Zone X is available on 48k cassette or disc, and retailing at £9.95 and £12.95 respectively.

Richard Vanner

Chop Suey tops bargain collection

FUNNY how simple ideas can quickly turn into big money spinners. Take compendiums, for instance. Walk into any record store and as sure as my name's not K-Tel you're bound to find at least half a dozen compilation albums of past smash hits.

Once upon a time you could buy a set of classic board games in a box. Nowadays those old compendiums of Ludo, Snakes and Ladders, Draughts and Nine Men's Morris have been supplanted by a technologically more advanced phenomenon – the computer games compendium.

These collections of previously released games have proved to be very popular, and it's not hard to see why. A compilation of quality games offers astoundingly good value for money.

English Software, publishers of the amazing Elektraglide (reviewed in a recent issue and in my book the best Atari race game ever), are no slouches when it comes to giving the Atari games-playing public what they want.

They have just released a further volume in their Smash Hits series. ***Smash Hits Volume 4*** contains the superb Chop Suey, Kissin' Cousins, Hijack and one I have not seen before, Firechief.

Chop Suey is a top notch Kung Fu contest where you pit your martial arts skills against a human or computer-controlled opponent.

Impressively smooth animation and a variety of realistic moves result in a smashing game. Next to Elektraglide, this is English Software's best to date.

Kissin' Cousins has you racing and leaping through a succession of obstacle-strewn streets in a gallant attempt to reach a damsel in distress. Caterpillars, frogs, bombers and bats are just a few of the hazards.

In Hijack you pilot a chopper and must rescue 10 VIPs from a moving train. To accomplish a rescue you have to position the chopper over a VIP (who has thoughtfully climbed on to the top of the speeding train) and lower a rope for him to grab.

You then deposit him on top of the rear carriage where he will be secure. Trees and cannons add to the difficulty.

Firechief sets you speeding left to right along a four lane highway, dodging traffic – you can even zoom over it – until you reach an office.

Inside you scour the maze for a safe, all the while dodging and dousing fireballs before returning to the streets and on to the next office. Three skill levels are on offer. This one's tough but addictive.

Of the four, Chop Suey is easily the best, and the compendium's worth buying for that alone. But with three other decent games thrown in for good measure, you really can't go wrong.

Bob Chappell

The Zombies return to life

ELECTRONIC Arts has always been a good source of original and exciting software, but I was slightly disappointed at **Realm of Impossibility.**

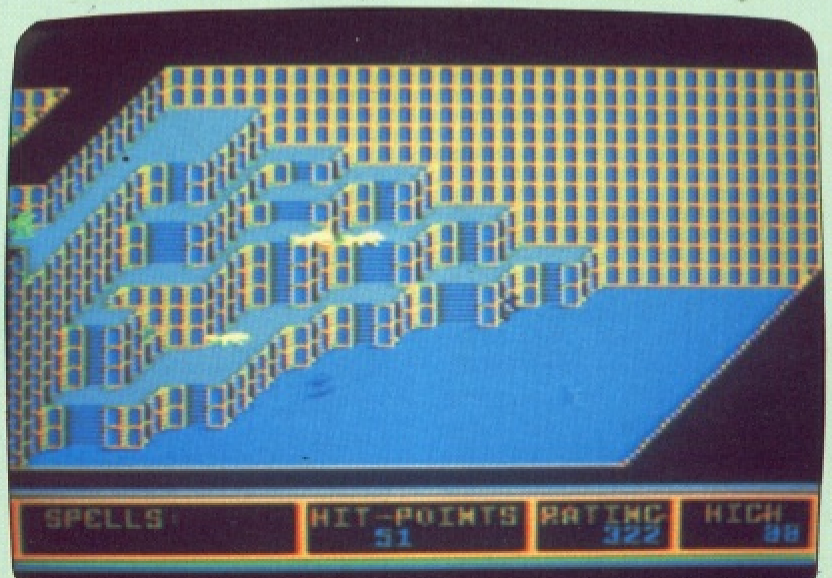
Originally released under the name Zombies, the program has now been revamped and licenced in the UK by Ariolasoft.

The game follows a good against evil theme. The player stars in an Indiana Jones type role, fighting all forms of nasty beings from marauding zombies to small round orbs which look like gobstoppers.

The action starts when an evil cleric called Wistrik steals the seven crowns of the middle kingdoms, and yes, you have to recover them.

This Wistrik isn't stupid. He has hidden the crowns among his 13 dungeon strongholds – but he made one small mistake, he only locked six of the dungeons. The other seven contain either keys that open the remaining locked dungeons or crowns for you to collect.

A menu shows dungeons that are locked, completed or unentered. When you select a dungeon the screen changes to a 3D view of the dungeon, giving a clear perspective scene reminiscent of the famous Zaxxon. Your man stands ready to explore the passages ahead.



You will probably have wondered why this game is titled Realm of Impossibility? Well some of the dungeons have walls that would confuse any bricky.

In the Realm of Impossibility dungeon, for example, there is a 3D platform that seems to be 100 metres high, and yet you can step down to ground level at the side of the platform.

As you move out of a room the screen scrolls the next section smoothly on and when this is complete a whole host of creatures converge towards you.

At this point you should have scanned the room and begun a dash for the next room or be running towards any object you wish to pick up.

The creatures usually wander about or just head straight for you. When a nasty collides with you your hit points decrease. If your hit points drop below zero the game ends.

The bad guys include zombies, poisonous snakes, giant spiders and evil orbs. These subordinates of the evil world play a defending role, protecting the keys and crowns against intruders. They're not stupid, so be careful when being chased.

The problem with this game lies in the ease with which I completed all the dungeons. I finished the whole game on only my third go.

The game offers a two player game which is quite fun. Both are on the screen at the same time, so this calls for complete cooperation between them. If a player wishes to leave a room he must wait for his partner to leave as well. If a player is killed, the remaining player can resurrect his dead companion by touching him.

The price for this US Top 5 hit (it won't be in my top 100!) is £9.95 for cassette and £12.95 for disc.

Richard Vanner

MicroLink



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Take a joystick to the Fruiti Gambler

I THOUGHT the Fruiti Gambler game on page 34 of the August 1985 edition of Atari User very good, but found using the keyboard irritating.

I have altered it slightly to work with a joystick in port 1, and thought you might be interested in the changes.

```
420 POSITION N,20:? "PRESS START OR TR
IGGER FOR NUDGES"
430 NUM=INT(RND(0)*12)+0:IF PEEK(53279
)<>6 AND STRIG(0)<>0 THEN 430
```

Lines 420 and 430 allow you to press the trigger or start button for nudges.

```
535 IF STRIG(0)=0 THEN T1=11
555 IF STICK(0)=7 THEN T2=5
565 IF STICK(0)=13 THEN T2=6
575 IF STICK(0)=14 THEN T2=0
```

Line 535 allows you to press and hold the trigger to nudge up.

Lines 555 to 575 allow you to move the joystick to nudge the reels individually.

```
860 GOSUB 910:POSITION 7,20:? "YOU WIN
";PAY;"P":FOR QQ=1 TO 60:NEXT QQ
```

Line 860 saves you having to press the start button to collect your winnings.

```
1050 POSITION N,20:? "PRESS START OR T
RIGGER TO SPIN REELS"
1060 IF PEEK(53279)<>6 AND STRIG(0)<>0
 THEN 1060
```

Lines 1050 and 1060 allow you to spin reels by pressing the trigger.

```
1132 IF STICK(0)=14 THEN T2=8
1135 IF STICK(0)=7 THEN T2=5
1137 IF STICK(0)=13 THEN T2=6
1145 IF STICK(0)=11 THEN GOSUB 1220
```

Lines 1132 to 1145 allow you to hold or cancel each reel using the joystick.

```
2220 T1=PEEK(764):POKE 764,255:IF T1=1
8 OR STICK(0)=14 THEN RETURN
2230 IF T1=61 OR STICK(0)=13 THEN 2250
```

Lines 2220 and 2230 allow you to collect or gamble by pushing stick forwards (collect) or backwards (gamble). – **R.N. Taylor, Birmingham.**

The £20 button

I WONDER if you have any comment on a problem I have had with my Atari 1010 recorder.

The Play button broke approximately 11 months into the guarantee.

I contacted Atari who advised me to go to Mastercare at Bolton. I did this, but Mastercare were not prepared to undertake work while the equipment was under guarantee.

It did not seem worthwhile sending the whole unit back just for a button, so I authorised Mastercare to carry out the work.

The cost of replacing this button turned out to be approximately £20, which I reluctantly paid.

Since Atari had advised me to go to Mastercare knowing the unit was under guarantee I thought it not unreasonable to request a refund from Atari.

Atari's reply was short and sweet – No.

I accept that Atari have no requirement to refund this money but in view of the circumstances I felt all or some of the account should have been refunded. – **F. Ward.**

● We agree.

Guy down the hole

MAY I point out a bug which occurs in the Guy Fawkes program from your November magazine.

If one moves to the edge of the screen and presses the trigger the hole is effectively off-screen, and an Error 3 at line 1020 occurs, due to variable D being –1 and the "hole" being POKEd on to a non-existent screen.

This can be corrected by re-typing line:

```
1020 IF STRIG(0)=0 AND X<19 AND X>0 AN
D D THEN A(X+D,Y+1)=4:POKE P+D+20,0:RE
TURN
```

– **Paul Rixon, Shefford, Beds.**

● Roland Waddilove admits that he forgot to wally-proof the program, so that digging off the screen was trapped. Thanks for providing the necessary safeguard.

Alien has a bug

I AM a physics student at Imperial College and have had my 48k Atari 400 for nearly four years.

I have been buying Atari User since issue No 1 and have found it most informative and great value for money.

I particularly like the way in which the program listings are printed on a light coloured background, which makes them much easier to read and less tiring on the eyes.

It is nice to see that Stephen Williamson is doing a series on producing your own machine code games, but I would like to point out rather a serious bug in his program Alien Attack, which appeared in the January issue.

The problem arises because the XL machines are slightly different from the 400 and 800 machines.

The XLs only have two joystick ports, while the 400 and 800 have four ports.

On the 400 and 800 the states of the joystick fire buttons are held in memory locations 644 to 647 (284 to 287 in hex), but because the XLs only have two joysticks, locations 646 and 647 are only duplicates of 644 and 645 respectively.

Unfortunately Stephen Williamson looked at location 646 in his program to check the state of the fire button of the first joystick, which is fine if you have an XL machine, but on the 400 and 800 location 646 returns the state of the fire button on the third joystick.

So to play the game on a 400 or 800, you control your ship with the first joystick and use the fire button on the third joystick – not very easy, I'm sure you'll agree.

The solution to this problem is fortunately not too difficult.

After several hours of searching through the machine code I came across the problem on line 520, which read:

520 DATA 173,134,2,201, . . . etc.

To solve the problem, simply change the number 134 to 132, but don't forget that you must also change the checksum on line 40 from 171346 to 171344, to account for the different data.

I hope that this clears up any problems that 400 and 800 owners have had with using the program.

One other thing. There are several fast loading programs for the Commodore 64, Spectrum and Amstrad, but can such a fast loader be written on the Atari?

Perhaps you could publish such as program, since this would greatly improve loading times for cassette users. – **Stephen Gutteridge, Leicester.**

● Stephen is correct. Despite Atari's policy of making their 8 bit computers compatible there are differences, with some XL programs not running on the 400/800 models and vice versa.

Alien Attack was written on the 800XL and I inadvertently put in the wrong address for where the status of the fire button is detected.

As the program works correctly on the XL, this bug that makes the program incompatible with the 400/800, was not noticed.

The direction register for joystick 0 is correct so need not be altered for 400/800 users. The XL uses address 632 for stick 0 direction and 633 for stick 1 direction with addresses 634 and 635 dup-

→

licating these values.

On the 400/800 locations 634 and 635 are used to detect the direction of joysticks 2 and 3.

Maybe I should buy an old 800 to check that any future programs that I write are compatible.

Stephen Williamson

Good reading

LET me congratulate you on a first rate magazine for all Atari users, beginners and experienced alike. I especially liked Mike Rowe's series on the Atari's display list.

I agree with Steven Hurst's suggestion that you should include some assembly language and complex graphic routines for the more experienced Atari programmers to get to grips with.

I would be very grateful if you could help me with the following.

Could you tell me if there is a book available for the 800XL which has a disassembled listing of the Atari ROM and describes what each routine does and how it works, as does the book "The Complete Spectrum ROM Disassembly" by Melbourne House for the Spectrum.?

Could you also tell me if there is a book which lists and describes the uses of the different special memory locations and registers that the Atari uses?

I have read Mike Rowe's series and wondered where he got the information about the hardware register locations and the WSYNC location.

I hope you can answer my questions as I would like to make full use of the Atari's superb capabilities which leave other micros far behind. – **Alan Gilchrist, Carluke.**

● There is no book that gives a complete ROM disassembly for the 800XL, but let us recommend a few very good books for your purposes.

Firstly, "The Technical Reference Notes" (Atari) provides a full listing of the OS on the old 400/800 machines, which gives you a very good idea of how everything works on the XL too, plus you get the "Operating System Users Guide", an invaluable book to the machine code programmer.

The "Atari Basic Source Book" (Compute! Books) gives a disassembly and explanatory notes of the Rev A Basic cartridge, which bar a few bytes, is the same on the XL/XE.

DOS (2.0) is covered in two books, "Inside Atari DOS" (Compute! Books) which covers the core (DOS.SYS), and "The DOS Utilities Listing" (Atari) which provides a full listing of DUP.SYS (the utilities/menu segment).

As a good complement to the above books, there is a

FINAL WORD ON THOSE OS BUGS

HAVING bought an 800XL for Christmas 1984 I am now on my third one. The first locked up while keying in programs and was replaced.

The second had the same fault, and my third one, delivered only two weeks ago, does the same.

My attention has been drawn to a letter in Analog, issue 32, which states that 600XL and 800XL computers are being supplied with faulty Basic, and gives a simple test. Type in:

PRINT PEEK (43234)

If the result is 96 you have the defective Basic, but if you get 234 you have the updated Revision C Basic which is all right.

This matter was explained to my retailer, but it appears that all his XL models give the same, wrong, answer, therefore all have defective Basic.

According to the letter writer, Atari no longer have any Rev C Basic units left and say it is too expensive to set up a production run.

If this is the case, and Atari are deliberately marketing faulty machines, speedy action is necessary to remedy this situation, otherwise Atari will not last long.

Don't get me wrong – I am enthusiastic about Atari, having had the games console, 400 computer, 800 computer, and now an 800XL which has wasted hours of typing by locking up repeatedly.

If the Analog letter is correct the sooner Atari take quick action, the better.

Have any other 800XL users found this fault? – **G.J. Donaldson, Inverness.**

★ ★ ★

LET me congratulate you on your magazine for the Atari user. It will fill a void for the beginner and users of long standing.

The main reason for this letter is hopefully to help your reader L. Williams writing in the October issue.

I bought my Atari 400 early in 1982 and found that the owners manual and the Basic manual supplied only touched the surface of the capabilities of the machine.

I found I was getting faults, like L. Williams, which were not mentioned in either manual.

When editing a program, including rectifying errors, the keyboard would occasionally lockup, making it necessary to switch off and start up again losing whatever was in memory.

A phone call to the Atari Hotline gave me the solution. Apparently with too much editing and no LIST command the error buffer fills up and causes the keyboard to lock up.

The solution is to edit a little and then give the LIST command. I now have the habit of listing or editing no more than two lines at a time and then giving the LIST command.

It is time-consuming but I do not get lockups any more. – **G.A. Edmonds, Broxbourne.**

★ ★ ★

I OWN an Atari 600XL which I bought over a year ago. Until I saw your June issue of Atari User I had not been getting very far with understanding my machine, but I am now an avid reader of your Beginners and Graphics sections, which have taught me quite a lot.

I would like to know if you can help me with a problem that I have with my 600XL.

When I type a program it sometimes stops working.

I lose control of the cursor and the only way I can regain control is to use the Reset button.

This is fine most of the time, but sometimes this will clear all of the program that I have typed in and I have to start all over again.

Will you please tell me if this is normal or if there is something wrong with my machine. – **P. Turner, Tidworth.**

● Let's clear up this problem of bugs in the OS and Basic once and for all.

Like all computers, there are minor bugs in Atari's machines. We can be thankful that they are not as serious as, say, some of the early Sinclair or Acorn machines, but they are nonetheless still there.

Don't all go rushing back to the shops and ask for your money back, because the bugs can mostly be worked around.

The two most major ones concern the EXPAND and CONTRACT routines within Basic itself.

On the old 400/800 Basic cartridge (Rev A), one of the routines to move memory quickly downwards (CONTRACT) had a fault which meant that the machine would crash and lock up whenever it was asked to move a multiple of 256 bytes.

This very rarely happens of course, but is made much worse by a lot of editing, especially involving deleting lots of lines.

There is no cure for it,

superb memory map produced by Compute! Books called "Mapping the Atari".

It covers locations within the OS, Basic, DOS and all of the other useful bytes for graphics, sound, I/O and so on.

Make sure you get the revised edition if you have an 800XL, as it also covers locations on the XL and XE computers and DOS 2.5.

One other book that wouldn't go amiss is "De Re Atari" (Atari) which is a slightly less technical guide to the workings of the machine and its OS.

This is not a substitute for the "Technical Reference Notes", but is much more helpful to the less advanced machine code programmer.

Common variables

CAN you tell me please if there is a way in which one Basic program can load and run another disc without losing the variables and their values set up in the first program?

I appreciate that the command RUN "D:xxx.xxx" works from within a program, but it resets variables to zero.

Creating a data file on disc and then reading it from the second program would work, but it would be slow and the extra programming would be tedious and defeat the object, which is to modularise programs and keep them to a manageable size.

On the subject of long programs, is there any way of suppressing the maximum line number, 9999, that can be used to list ranges of lines?

As far as I am aware to list a range starting at over 1000, one has to list the whole program. – **A.G. Burton, Burwash.**

● There is no easy way to use common variables with Atari Basic, but how about setting up a file which contains your new program in LISTed format, plus lines containing just a line number to delete anything that remains of the old program?

By using RETURN key mode you could then get the new program to RUN correctly after you had ENTERed it. You may find that this is easier than setting up a variable file on disc.

The other question has no easy answer, I'm afraid. You'll just have to put up with typing that extra "comma 9999" after your LIST commands.

Strip Poker on disc

I HAVE just read the review on Strip Poker in your excellent October edition, but although it was a good review your writer, Pat Cookson, wasn't too clear about the disc

→

except to make sure you SAVE your program regularly.

You'll know if it happens, though, because the keyboard will accept nothing you type, and pressing Reset will only let you enter one more line, then it will lock up again.

When Rev B Basic was written for the XLs the fault – 2 bytes, would you believe – was corrected.

Unfortunately some bright spark at Atari decided that he'd better do the same to the sister routine EXPAND (which was perfectly OK as it was), hence the same can now happen when you add lines on an XL, so some people get lockups when entering programs.

This problem with EXPAND can also cause failures during the DIM command, giving you an error 9 where there should not be one.

Rev A Basic had a few other faults, minus zero gives odd results, as does INPUT with no variable. LOCATE and GET can occasionally get their data mixed up under very rare circumstances, and the NOT command is a bit quirky.

Rev B cured all these other problems of course, but introduced one other rather major one.

As the system could sometimes wipe out the last few bytes of memory before the display someone at Atari thought: "Ah! Let's add a little extra bit to Basic to tell the program that it can't use the last 16 bytes of memory".

Good idea, but he did it by adding 16 to the "end of program" counter, so that it would register as being out of memory 16 bytes too early.

This effect is cumulative, which means that every time you SAVE a program 16 useless bytes are added to it.

On a 16k machine this quickly mounts up, so, of course, you think: "Ah – so let's just LIST the program and re-enter it every so often to clear up the tables".

But then the EXPAND routine is used to the fullest, of course, to add lines, and you can well crash the machine. The only thing to do is SAVE it first, then LIST it.

If ENTER crashes the machine, re-load the normal version, and try adding a few bytes to some of the lines (such as a REM or two) then LIST it.

Many other cures have been pronounced, but I can stress that none will work – the most likely probably being to wave garlic over the keyboard!

All of these bugs have been cured in Rev C, which is in the XE machines and also available on cartridge for older computers.

The OS is not without its problems too. The old 400/800 OS could time-out every so often during disc or printer I/O.

It would come back about 30 seconds later, but would have spoilt a printout by then.

This was caused by a routine accidentally left in the machine code which allowed for older printers to cool down during a long print run.

Also the cassette routines didn't clear their buffers correctly, so CSAVE could sometimes leave garbage at the start of a file, causing it not to load back again.

The cure for this one is simple. If you have a 400 or 800, always type LPRINT before trying to CSAVE a program (ignore the 138 error).

This will ensure that the buffer is clear before you start.

A number of other things could cause minor problems, but only at a machine code level, so I won't cover them here.

On the XLs, the OS was revised to clear these problems, and is by and large bug-free. However the hardware isn't.

There exists, in early 600XL and 800XL machines, a timing problem with the 6502 chip.

It normally works fine, but after a lot of use as it warms up one particular brand of chip lost all track of time, and couldn't communicate with the other chips in the machine.

The cure for this is a replacement 6502 chip, but only use an Atari supplied version, or you'll run into further problems.

You can find out if you have this fault (known as the math pack lock-up) by running the following program:

```
10 A=1:B=2:C=3:D=4:E=5
20 PRINT A+B-C*D/E
30 GOTO 10
```

Leave this running overnight, and if it fails, probably with a yellow screen and garbage on the bottom line of the screen, you have the faulty chip, and you should take your machine in for repair.

Only the math pack problem will cause this program to fail while running.

Perhaps this will clear up just what the bugs are, and why they occur. As I have said, though, they are generally minor, and can usually be avoided by the common practice of making regular backups of programs.

André Willey

version.

Having got the disc version I thought I'd better point out a couple of things.

For one thing, it only requires 48k, not 64k as Pat stated.

I had trouble loading it until I decided not to press OPTION on boot-up. So you need Basic for the disc version.

I hope this helps people having trouble with this excellent game. – **Mark Oxley, Newton Abbot.**

● I think that I'm probably the best qualified person in the UK to answer this one, as I did the cassette version for US Gold.

The disc version is basically the same as the stateside release (48k), and it requires Basic.

As I didn't add anything apart from some protection routines to the disc, you must have Basic resident to play the game – that is, don't hold down OPTION on an XL/XE.

As I did a lot of re-writing for the cassette version, and tucked all the pictures underneath the operating system and Basic, you must have a 64k machine to run it.

In fact I only had about 52 bytes to spare under there, so it's a tight squeeze.

The cassette also requires Basic, but if you accidentally do press the OPTION key and disable it the new machine code loader routines I wrote will just turn it back on again. Neat, eh?

So if you're feeling kind, and want to save the computer about a milli-second's work, then don't hold the OPTION key down.

Pat only had the cassette to go by, and so couldn't know the changes for disc.

André Willey

Disc doublers

I AM shortly to buy a disc drive for my 800XL.

For a number of issues you have been advertising a disc doubler which is designed to "Halve your costs".

I'm in two minds about buying one, as according to my friends, modifying a disc in the way described can be harmful to the drive and corrupt the disc.

They say that the tissue paper which lines the discs is grained in such a way that turning it backwards will tend to scratch the magnetic particles from the surface. Is this true? – **Richare J. Harrison, Barnsley.**

● Opinion is divided on whether disc doublers are a good or bad thing.

Disc manufacturers obviously don't like them and have probably been responsible for several scare stories.

Balanced against this is the fact that many people use them without problems.

The *Atari User* editorial team contains proponents of both positions, so you'll have to make up your own mind.

ATARI USER Mailbag

WE welcome letters from readers – about your experiences using the Atari micros, about tips you would like to pass on to other users . . . and about what you would like to see in future issues.

The address to write to is:

Mailbag Editor
Atari User
Europa House
68 Chester Road
Hazel Grove
Stockport SK7 5NY

User groups

A NEW user group has just been formed in Swindon meeting twice monthly.

If anyone is interested then please telephone Colin on (0793) 695675. – **Paul Taylor.**

★ ★ ★

MAY I appeal through your columns for Atarians in my area to contact me with a view to setting up a Yateley and District Atari User Group. – **Brian Duckett, 13 Bridge Walk, Yateley, Camberley, Surrey GU17 7TX.**

★ ★ ★

I HAVE "output", do you have "input" and live in the Cardiff area? If so and you are interested in joining or forming an Atari User Group please contact me at the address below.

You may even find a computer being put to uses that you had not thought of. Look forward to hearing from all you Atari enthusiasts out there in the wilds of the Cardiff area. – **Raymond Price, Mandeville House, 9 Lewis Street, Canton, Cardiff.**

Newspaper accounts

I HAVE an 800XL, disc drive (1050) and will soon be getting a printer.

I run a newsagency and I was wondering if there is a program for the Atari that will help with my newspaper accounts.

There are over 700 accounts and the program must be able to access each one, change the contents, save to disc and then load the changed accounts at a later date.

It should also be able to calculate bills output by the printer. – **Neil Thurlow, Plymouth.**

● You could use an accounts package, but this seems rather like over-kill in this case.

Have you thought about putting the information onto a database which has a built in calculator feature, such as Synfile +?

It's worth thinking about, and may end up saving you a lot of time and trouble in the long run.

Simple bills, of name, address, date and outstanding amount could be printed, and anything more complex could be linked into mail merge on a good word processor, Superscript perhaps.

Auto-boot tapes

COULD you please tell me if there is any way of turning an ordinary Basic program into a boot-tape, and could you explain fully how it works.

I would like to know what I'm doing rather than just typing in a listing. – **J. Walker, Acton Vale.**

● The easiest way to produce a boot-tape is to save the program using SAVE "C:". You can then load and run the program with the single RUN "C:".

We hope to publish other ways of producing auto-boot tapes and discs in a future issue. Needless to say, we'll give full explanations.

Expanding the 600 XL

MAY I expand the memory of my son's 600XL with modules of 64k up to 128k that are on offer in your magazine?

After doing so, would I need to buy games that have been specially made for expanded systems – or do I need to scrap it and start again? – **M.I. Leggett, Romford.**

● With the present high cost of expansion modules you'd be better off starting again with either a bargain 800XL if you can find one or a 130XE.

Piracy pointers

I READ with interest your report on John Lawson's campaign to stop pirating his company's (Computer Support) hardware, and I have two observations to make.

I bought Computer Support's 80 column /XOS hardware modification system and had them install it.

It turns out that the colours

in some important graphics programs did not work any more and Computer Support offered to change their product if I took out the chip myself.

If you are worried about such things (that is the colours being botched) they would make the change for £20, bringing the total package to £100.

Equally important, their hardware is incompatible with Atariwriter, a detail which they forgot to mention.

Pirates are a market phenomenon. If producers charge monopoly prices, pirates open up the market.

Conclusion: Computer Support should get their house in order and charge prices at which pirating becomes uneconomical. – **Oscar Werdmuller, Oxford.**

Looking for a printer

LATELY the Atari world seems to have been moving very fast and I was wondering if you could answer the following enquiries:

Are Ocean to release Frankie, Street Hawk, Daley's Super Test and Decathlon etc on the Atari? If so, when?

I heard that Beyond were to convert some of their games for the Atari some time ago. Is this true?

Do you know if any of the other prominent British software houses are planning any releases for Atari?

Having read through Get More From the Atari by Ian Sinclair I was looking for a book which would not only go into depth about the Atari's advanced features but would also explain them clearly.

"Your Atari Computer" looked good but £17.50 is a lot of money to waste if it only tells me what I already know.

Can you advise me on what it contains and possibly recommend another book? – **Chris Howarth, Prestatyn.**

● The answer to your first two questions is – possible, but unlikely in the near future. The best way to find out is to contact the companies concerned.

Melbourne House, Anirog, Gremlin Graphics, Wizard Development, Tynesoft, MicroPro/Precision and many others are all planning releases on the 8 bit Ataris.

"Your Atari Computer" is a very good book, and covers as much ground as it can without going into machine code.

It is a little expensive, but we think it's worth every penny. Ask any serious Atari user about "The Blue Bible", and you'll see what we mean.

New releases

I AM hoping shortly to buy a printer for my 800XL, so I will require an RS232 or a Centronics parallel interface.

This is where I need your advice as to an inexpensive, but reliable one.

I phoned various hardware outlets and found the range to be between £59 and £80, a price that suits my pocket.

A couple of teleprint modules fall in this range, but I was told by one outlet that they would not touch or guarantee them. – **Lee Charlton, Halesowen.**

● The bêst answer is to look through the ads in the magazine. Any interface sold by a reputable company will have a 12 month guarantee and after that you can always go direct to the manufacturer if the retailer can't help you.

However most interfaces, being solid state will work trouble-free for ever more.

If your retailer says he won't touch a particular interface, find out why and let us know.

Reluctant camels

I HAVE a 600XL and a 1010 Data Recorder with which I cannot load "Attack of the Mutant Camels".

It is a machine code game so you have to get the computer in machine code mode when it is switched on, but after about 30 seconds it goes into the self test. It will not load Basic either, although you can hear data going onto the tape and if you play the tape back you hear the data.

Incidentally do you know why the recorder has a stereo head and the data is recorded on one channel? It baffles me. – **Phil Doody.**

● The problem is almost certainly with the recorder. Try taking it into a local shop and see if they'll let you try it out with one of their machines. If it works OK, take your computer back for repair.

Otherwise send it back to the place you got it from, asking for a new one. The stereo system is to allow the extra track to be used for a soundtrack while loading.

BBS on test

YOUR readers may be interested to learn of a new BBS under test on Nottingham 0602 274369. Hours 22.00 to 07.00 daily, Sysop Mike Jervis, speed 300 baud. Atari based. Special interest ice hockey. – **M. Jervis, Nottingham.**

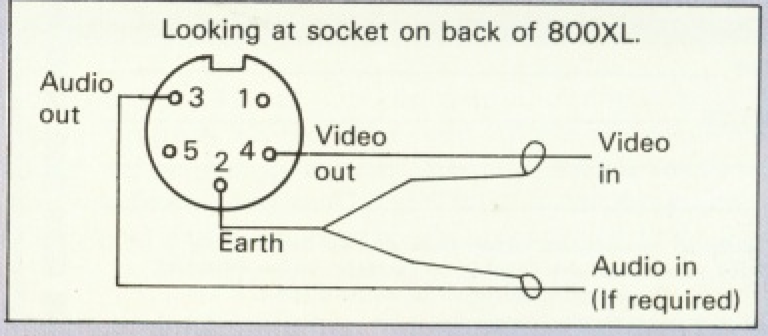
Video connection

COULD you tell me how to transfer graphics produced by the 800XL on to video tape? – **Derek Heptinstall, London SE6.**

● The 800XL, as with all Atari computers except the 400, has a video out socket at the back – marked monitor.

This 5-pin DIN can be connected to the "video in" socket on the video recorder, and the video select switch changed from Tuner to Aux or sometimes Camera.

This will give a far better result than simply plugging the TV lead into the aerial socket on the video. Either use a standard monitor cable, or wire up a lead as follows:



Location 54017

I OWN a 130XE, bought after my lad acquired his 800 with tape.

I thought I'd better learn that a delay loop wasn't something from the family planning clinic!

My other lad's 800 has been back at Atari's for five months with a keyboard fault, but that's another story.

My question is this: The 130 handbook states that "normally, memory location 54017 contains a 193". If I PEEK 54017 I get 253, and so does the display 130 in the shop. Can you clarify this for me? – **A.M. Sharp, North Wolds.**

● Location 54017 on the 130XE should normally contain 253 with Basic turned on, not 193. See my article in the June 1985 issue for a full description of how it works and what each number means.

André Willey

Fun and Games

WE would like to add a further comment to Cliff McKnight's account on Summer Games I.

We were quite happy with it until we came to the scoring. We received gold, silver and bronze medals but not in the correct order.

The person in first place got a bronze medal and the person in second place received a gold medal.

For some unknown reason, when we ran the 100 metres our time was 10.58 for which we received a world record but it recorded time 00.

Those are only two of the bugs that we have found. – **Martin Parry and Darren Rayfeld, Maidstone.**

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July issue: Disassembler, Bomb Run, DOS 2.5, 17 Commandments, Adventuring, Display List Tutorial, Software reviews, Power Functions, Treasure Hunt, Keyboard Sounds, Microscope, Insights – Bit Wise, Beginners and Graphics.

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September issue: 8-page special on the 520ST, Mode 8 screen dump routine, Maze Munch, Data Maker, Display List Tutorial, 68000 addressing modes, list processing with Logo, Software reviews, Insights – Bit Wise, Beginners and Graphics.

October issue: Computer Canvas graphics program, Updates for RAW 6502 assembler, 130XE Ram-disc utility, Hex/Ascii memory dump utility, Pontoon, Software reviews, 68000 operating environment, Wraptrap, Insights – Bit Wise, Beginners and Graphics.

November issue: Converse program, Bitwise operator utility, ST graphics examples, ST software list, Guy Fawkes game, Display List tutorial, Adventuring, Microscope, Software reviews, Insights – Bit Wise, Beginners and Graphics.

December issue: Check-sum program, Special keyboard characters, Basic XL review, GemWrite and GemDraw, Countdown game, Disco, Display List tutorial, Software reviews, Left-handed joystick, Adventuring, Beginners and Graphics.

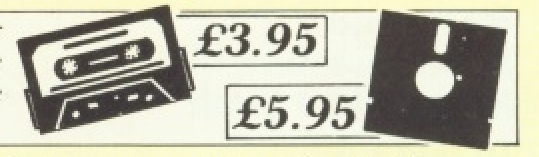
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February issue: Machine code games Pt. 2, Dragon curves in Logo, Flashing colour utility, Micropainter manipulator, Bridge program, Memory management techniques, Interrupt driven clock, Bounce game, ST problem page, Adventuring, Software reviews.



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JUNE: Frog Jump: Guide the frog to his home in this version of the arcade classic. **1300XE Ram Power:** Use the extra 64k of memory to good effect. **Submarine:** Scuttle the submarines. **Etcha-Sketch:** Draw pictures with a joystick. **Random Numbers:** Get random numbers from machine code. **Filthy Fifteen:** Can you keep the Filthy Fifteen happy in their cells?

JULY: Bomb Run: Flatten the deserted city and land safely. **Disassembler:** Find out what's going on deep inside your Atari. **Treasure Hunt:** Use logical thinking to find the treasure. **Password Generator.** Keep generating passwords till you find one you like. **Keyboard:** Convert your micro into an organ. **Quasimodo:** Can you sort out the mess of ropes in the belfry?

AUGUST: Assembler: Make machine code programming easier. **Fruiti Gambler:** Save money with this fruit machine simulation. **Mandala:** Complex patterns made easy. **Protection:** Protect your programs from prying eyes. **Display List:** Demonstration programs. **Raider 1997:** Futuristic text adventure. **Touch Tablet:** Demonstration programs.

SEPTEMBER: Maze Munch: Help Horace the Blob munch the maze monsters' morsels. **Data Maker:** Convert your machine code routines to DATA statements. **Display List:** Demonstration programs. **Screen Dumps:** Dump your Mode 8 screens to a 1029 printer. **Bricks:** Solve the Bricks problem.

OCTOBER: Pontoon: Twist? Bust! **Memory Dump:** Examine memory in hex and Ascii. **Display List:** Demonstration programs. **Wrap Trap:** Action game for one or two players. **Computer Canvas:** Make your own micro masterpiece. **Assembler Update:** Improvements for RAW assembler. **Ram Disc:** Make the most of the 130XE's extra memory.

NOVEMBER: Guy Fawkes: Help Guy escape from the guards. **Converse:** Teach your Atari to be a psychotherapist. **Display List:** Demonstration programs. **Bitwise Operators:** Utility to provide logical functions. **Circle:** Draw and fill a circle. ***Plus:*** Freebie of the month – **Creepshow** machine code pinball game.

DECEMBER: Countdown: Micro version of the famous TV game. **Get It Right!:** Atari User's own check-sum program. **Disco:** Son et lumière on your Atari. **List Utility:** Makes listing easier. **Display List:** Demonstration programs. ***Plus:*** Freebie of the month – **Jane's Program**, machine code entertainment.

JANUARY 1986: Bells: Help Mr Humpy rescue Esmerelda. **Get It Right!:** Atari User's own checksum program. **Alien Attack:** The game to accompany the machine code series. **Lister:** Make listing programs easy. **Dots:** Play the micro or another player at this strategy game. **Dump:** 1020 printer/plotter routine. ***Plus:*** Freebie of the month – **Scramble Fighter** machine code game.

FEBRUARY: Micropainter: Programs to manipulate Micropainter screens. **Clock:** Interrupt driven clock utility. **Flasher:** Flashing colour utility. **Bounce!:** Simple to play, hard to master. **Bridge:** The thinking person's card game. ***Plus:*** Freebie of the month: **Demon's Lair** – an adventure game you may never escape from.

MARCH: Horse Play: Knight's tour program. **Basic Compiler:** Program to accompany the new series. **Alien Attack:** Final part of assembly listing. ***Plus:*** Freebie of the month: **Winston in the Caves** – can you keep your head and help Winston find his?

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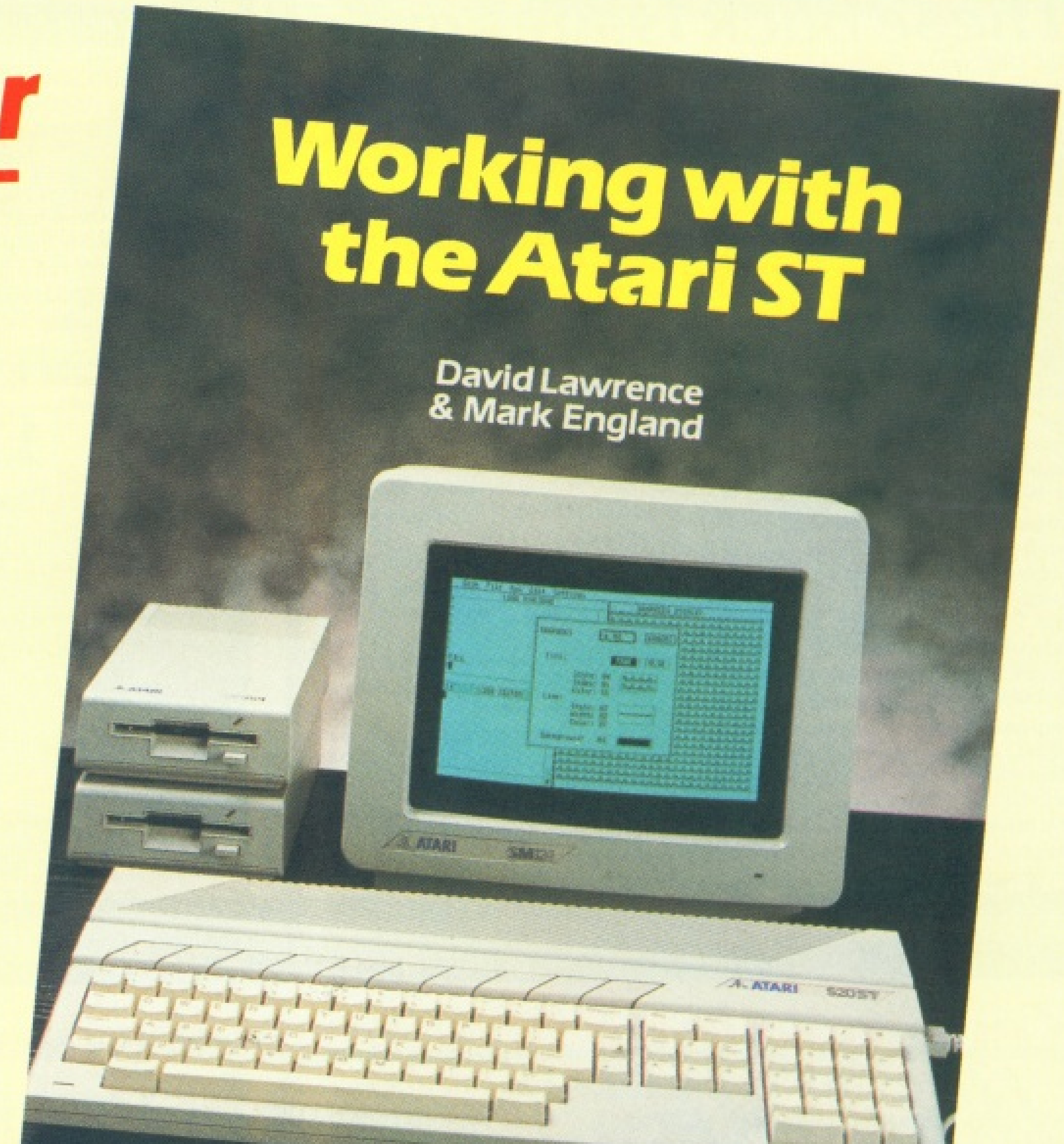
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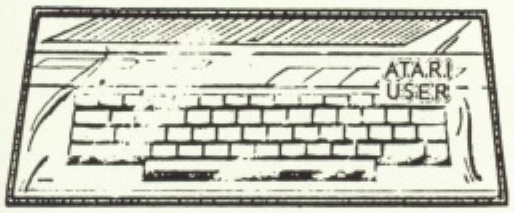
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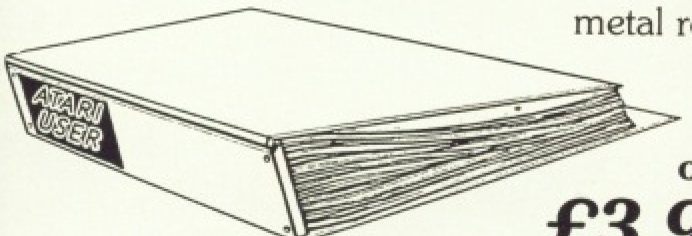
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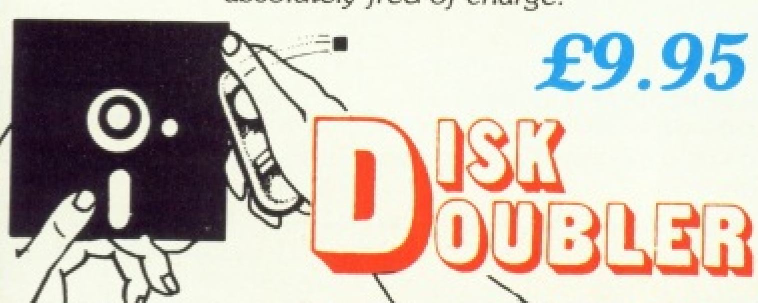
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